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CANADIAN MEDICAL ASSOCIATION ONTARIO MEDICAL ASSOCIATION CONJOINED ANNUAL MEETING

Ottawa, June 17-18-19-20, 1924

The preliminary sessions for the next annual meeting which is to be held at Ottawa in 1924, have been held and organization is well under way under the leadership of Drs. J. F. Kidd and J. F. Argue of Ottawa. The dates selected are June 17th—20th.

The committees have organized and a most suitable location has been found with ample accommodation in the new Collegiate Building on Carling Avenue West, which has just recently been completed, and is up-to-date in all respects. The chairman has succeeded in surrounding himself by a painstaking and earnest committee, and its various branches are already organized and each one has held its preliminary meeting.

As is well known, the meeting of 1924 being held in Ottawa is a conjoined meeting of the Canadian and Ontario Medical Associations. For the information of the profession, and to facilitate inquiries and correspondence, we give

herein the personnel of the committees in charge:—

<i>President, Canadian Medical Association</i>	Dr. J. F. Kidd.
<i>President, Ontario Medical Association</i>	Dr. J. F. Argue.
<i>Chairman, Local Executive</i>	Dr. I. G. Smith.
<i>Secretary, Local Executive</i>	Dr. J. A. Dobbie.
<i>Advisory Committee</i>	Dr. R. W. Powell, Dr. H. B. Small, Dr. J. L. Chabot and Dr. R. E. Webster.
<i>Section on Surgery, Chairman</i> ...	Dr. D. T. Smith.
<i>Section on Medicine, Chairman</i> ..	Dr. W. S. Lyman.
<i>Section on Obstetrics and Gynaecology, Chairman</i>	Dr. A. T. Shillington.
<i>Section on Pathology and Laboratory Methods, Chairman</i> ...	Dr. J. H. Laidlaw.
<i>Section on Eye, Ear, Nose and Throat, Chairman</i>	Dr. J. D. Courtenay.
<i>Section on Paediatrics, Chairman</i>	Dr. R. F. Fligg.
<i>Publicity Committee, Chairman</i> ..	Dr. W. E. Crain.
<i>Exhibits Committee, Chairman</i> ..	Dr. D. M. Robertson.
<i>Entertainment Committee, Chairman</i>	Dr. R. E. Valin.
<i>Arrangements Committee, Chairman</i>	Dr. C. H. Brown.
<i>Finance Committee, Chairman</i> ...	Dr. A. S. McElroy.
<i>Transportation Committee, Chairman</i>	Dr. F. W. McKinnon.
<i>Ladies Committee,</i>	Mrs. J. F. Kidd and Mrs. J. F. Argue, with power to add.

A Clinical Lecture on CHRONIC ARTHRITIS

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MUCH has been written of late on the subject of the chronic arthritides, in which the somewhat bewildering names of rheumatoid arthritis, osteoarthritis, arthritis deformans, atrophic and hypertrophic arthritis, chronic rheumatism, etc. are found. The effect of so many names cannot fail to be confusing. Classification has followed classification, of which none has seemed sufficiently good to warrant general adoption. The subject, too, is of the highest importance, as no other disease approaches its capacity for crippling. It would seem that it is high time to inject a little simplicity into a ponderous and almost unmanageable subject. Two names stand out with some prominence in this connection. One of these names, rheumatoid arthritis, is usually given as indicating a chronic arthritis attacking young and early middle-aged individuals, confining itself mainly to the synovial membranes, largely infective in origin and attacking many joints. X-ray changes, taking the form of lipping at the articular margins, appear somewhat late. Osteoarthritis, the second of these names, is supposed to indicate another and distinct disease coming on more insidiously and later in life, attacking the articular ends of the long bones, often monarticular and showing early x-ray changes in the form of lipping. As a matter of fact there is a certain amount of difference between these two types of chronic arthritis, enough to make of them two subdivisions of one disease but not nearly enough to make two separate diseases. The writer has long wished to avoid a confused nomenclature, and has recently been stimulated by an article, "The Nature of the so-called Rheumatoid Arthritis, and Osteo-Arthritis," by A. G. T. Fisher, *British Medical Journal*, July 21, 1923, in which the author makes a plea for the term "chronic arthritis" as simple, scientific and accurate. One type of chronic arthritis resembling the so-called rheumatoid arthritis he

calls the synovial type, a second which resembles what has been termed osteo-arthritis, he calls the chondro-osseous type. Let us hope, with Dr. Fisher, that an era will soon dawn when "rheumatism," "rheumatoid" and allied terms will be banished from scientific language.

Diagnosis of chronic arthritis.—As a rule this presents little difficulty when several joints are involved. An acute onset may simulate rheumatic fever. The latter, however, reveals itself by its tendency to jump from joint to joint, its high temperature and the fact that it tends to a cure after a few weeks, leaving few or no traces behind in the form of crippled joints. An arthritis prolonged over months and leaving stiff joints in its train is not likely to be acute rheumatic fever. Chronic arthritis under the term "rheumatism," is like the blessed word Mesopotamia, of the greatest comfort to those who invoke it. The diagnosis is very often in error, and only too frequently is a mask for ignorance or laziness. The doctor who dismisses a pain in the back as "rheumatism" without examining his patient is doing no justice at all either to his profession or to the sufferer. A "rheumatic" pain between the shoulders is very apt to be due to a prolonged stooping position, to be cured much more quickly by a normal posture than by the exhibition of salicylates. A pain in the lumbar region is often caused by flat feet or a pendulous abdomen, while the discomfort which accompanies a scoliosis is easily relieved by supporting the back. One can understand that treating such conditions as "rheumatism" is what sends the patient to the osteopath or chiropractor. A sudden pain in the lower back following the stooping position is more likely to be sacroiliac strain than a manifestation of the "rheumatic" diathesis.

In the knee one may note a very common error. Assuming that a patient has once had chronic arthritis of the knee joint, any disabil-

ity in the joint will be diagnosed "rheumatism" for his life-time and treated by drugs. It is a fact, however, that in many such cases great relief if not a cure may be obtained by treatment directed towards the fat pad lying beneath the patella. This fat pad often becomes enlarged and a source of great disability not only following chronic arthritis but trauma of various forms, and frequently maintains its crippling effect years after the arthritis has burnt itself out. Baking, massage and a high heel will cure many, while operative removal is at times necessary.

In the foot the presence or absence of chronic arthritis makes an enormous difference in the prognosis and treatment. The practitioner who promises a speedy cure of a painful and flat foot but overlooks the presence of gonorrhoeal arthritis as a complication will not soon forget his error. It is in connection with the foot particularly that one must weigh the evidence in favour not only of mechanical disability but of chronic arthritis. Frequently both elements are a cause of pain. The diagnosis of chronic arthritis is not difficult in the presence of multiple joint involvement, but when the foot alone is affected one must look for tenderness too acute to be caused by an arch condition, swelling particularly of the toes and metatarsal region, and the presence of a suggestive history and of an exciting cause. Crepitations in other joints help to establish the diagnosis. No diagnosis of a foot condition should be made without making the patient stand on his bare feet. An examination made with the patient seated or in bed is of little value concerning the foot as a machine. Many a man has been dismissed with a bottle of medicine whose feet, had they been examined, would have shown the need of an arch support or of a metatarsal pad. The condition of rigid flat foot, with spasm of the peroneal muscles, is almost invariably diagnosed as "rheumatism," when it chiefly needs wrenching and strapping in a position of inversion. One need scarcely mention the danger of diagnosing "rheumatism" in childhood. In the x-ray differentiation between chronic arthritis and tuberculosis the presence of new bone formation in the former contrasts sharply with the loss of substance characteristic of the latter, while one can as a rule exclude tuberculosis of

a joint if after three or four months a good x-ray shows no sign of its presence.

The treatment of chronic arthritis is no longer the simple procedure of twenty years ago, when one wrote one's favourite prescription and ordered oil of wintergreen rubbed on. We now know that it may be due to many different causes, each to be treated in a different way. Pus somewhere in the body is the most likely source of arthritis, so that one begins, as a rule, by a search for the so-called "focal infection." Diseased tonsils, abscessed teeth and chronic gonococcal infection are perhaps the most frequent offenders. Cholecystitis, boils and purulent skin eruptions should be treated if present. Syphilis should be excluded. Chronic constipation and anaemia should be remedied by appropriate medication, diet, etc. If no pus can be found it is a good plan to try a change of diet. Begin with one containing no meat, as this should relieve any cases due to protein putrefaction in the intestines. It is well to give with this diet a mixture containing wine of colchicum and potassium citrate. If still no change is manifest after a couple of weeks it is well to try a diet low in starches and sugars, such as diabetes use.

Local treatment is of great benefit. Joints have such a poor blood supply that heat in any form is of the greatest comfort, whether this be hot lead and opium fomentations, the electric baking pad or the use of electric light bulbs. In some cases it is of benefit to give a hypodermic of boiled milk about twice a week, beginning with half a cubic centimeter and increasing each dose. This boiled milk acts to some extent as a vaccine. Iodine internally and externally is of service at times, as also a good liniment to be used by the patient at home. Massage is of great service. Parathyroid gr. one-tenth twice daily has been urged as particularly useful in the presence of chronic infection.

Some cases of chronic arthritis are not infective but mechanical or traumatic in origin. A relaxed, and at times painful, knee joint always accompanies a stiff hip, owing to the extra strain to which it is subjected. A flat foot may cause chronic joint strain and hence chronic arthritis in the knee, hip and lower back. A foot plate is here indicated, with attention to

the backache, etc. A backache from such a cause would be greatly helped by a pelvic binder or broad strap. A short leg or deformed foot, a bow leg or knock knee are all capable of causing painful joint strain in the joints of the spine and lower extremity. An ankylosed hip joint is a common cause of back strain, all the more so when it has become stiff in a deformed position.

Degenerative processes in the joints appear in older patients, and here mechanical support such as a back brace, aided by baking and massage locally, should improve the patient's comfort.

Joints being machines, mechanical assistance must always be of importance in their treatment. It is logical to support a fallen arch when the patient suffering from arthritis in his foot begins to walk. A pad of felt or absorbent cotton just back of the metatarsal heads will give comfort to a depressed anterior arch. A knee joint which cannot endure lateral strain, or which suffers when approaching full extension will be greatly benefited by a properly designed brace. It need hardly be said that the design and the fitting of any brace should not be left to a brace maker. A Thomas brace will

relieve the strain of weight bearing in a case of chronic arthritis of the hip joint, thus allowing the patient to be up and about. A back brace or plaster jacket gives much comfort in cases of vertebral arthritis.

Where an important joint has been irreparably destroyed but remains a source of great pain the question of operative interference must be considered. A hip joint, for example, with but a few degrees of motion left but in which such motion produces great discomfort, is much better ankylosed by operation, after which no pain will recur. The shoulder joint lends itself to such a procedure owing to the great mobility of the scapula. The making of a new joint is at times indicated, especially in the hip, the elbow and the great toe joint.

One lesson to be learned is the need of greater co-operation between physician and surgeon. There are many more opportunities for a surgeon to be of assistance in these conditions than is generally considered to be the case, and surgical help need not only be sought when the physician considers the case hopeless.

Repair in Hydronephrosis.—The matter of repair in hydronephrosis with reference particularly to early and late changes after relief of brief obstructions when opposite kidney is not disturbed was studied experimentally by Frank Hinman, San Francisco, and O. W. Butler, Los Angeles. The result of this work is summarized as follows: A hydronephrosis of seven days' duration from total ureteral obstruction returns anatomically and functionally to about normal. The recovery is more prompt if the opposite kidney is removed or so diseased that it is incapable of complete function. The recovery of a hydronephrosis of from fourteen to twenty-one days' duration requires the stimulus of compulsory function which in the longer period must be gradually and not suddenly applied. If left in partnership with the normal kidney, which meanwhile has undergone compensatory hypertrophy, atrophy will replace the initial repair, an atrophy of the nature of a disuse atrophy, even

in the case of hydronephrosis of shorter duration. There is considerable initial recovery of function and repair hypertrophy of a kidney after relief up to twenty-eight days of total obstruction. This recovery, even after shorter periods of obstruction (fourteen days), is temporary if the healthy kidney is undisturbed, and in the course of several months an atrophy of the nature of a disuse atrophy replaces it.—*Jour. Am. Med. Ass.*, Dec. 15, 1923.

Chinese Diplomacy.—The following is the rejection form used by a Chinese editor: "We have read your manuscript with infinite delight. Never before have we revelled in such a masterpiece. If we printed it the authorities would ordain us to take it for a model, and henceforth never print anything inferior to it. As it would be impossible to find its equal within ten thousand years we are compelled, though shaken with sorrow, to return your divine manuscript, and for so doing we beg one million pardons."

THE EFFECTS OF STAGNATION IN THE ASCENDING COLON*

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I PROPOSE to speak to you about a condition which is, in my opinion, one of the most important with which the profession has to deal. It is one of the commonest. Its effects are often reflected in distant parts of the body in a serious manner, and I believe it is frequently responsible for both acute and chronic lesions which affect other intra-abdominal organs. This opinion has been gradually forced upon me. I should like to convey to you the possibilities which correspondingly have been impressed on me of helping those who suffer from this condition.

For the past fifteen years or thereby, I have been very much interested in the anatomical arrangement and connections of the large bowel. More than ten years ago I published several papers in connection with this and allied subjects.†

I have been impressed by the fact that these arrangements vary a great deal, especially in the region of the ascending colon—the part which forms the subject of my address this evening. It is perhaps natural that variations should occur most frequently here, because it is the part of the alimentary tract which is the last to settle down into its permanent position, and it may have, in a measure, to fight for possession of that position against another prospector who, during development, may arrive earlier on the field.

At an early stage of my investigations, I felt that probably these variations could not exist without producing corresponding varying effects upon the internal economy of the individual. Observations during subsequent years convinced me of the profound influence of these

abnormal conditions of the colon. Although their influence may be profound, yet it is frequently so insidious and slow in asserting itself that, neither the individual who is affected, nor the doctor who is the family attendant, appreciates the degree of ill-health which it has produced. I agree with Sir Arbuthnot Lane in the wide-reaching effects of chronic intestinal stasis—on all the tissues of the body, whether skin, connective tissue, muscle, bone, cartilage, blood, nerve cells or secretory cells; on the function of different organs, on their external or on their internal secretions; on local metabolism or on general metabolism. These different tissues or organs, these local or general processes, are affected in *varying degree and in varying manner* in different individuals. Some of us appreciate the deleterious effect of even one day's constipation; by such, the effect of a chronic stasis should be easily imagined. What is the most extensively used and successful class of medicines employed in these modern days? Laxatives, without a doubt! What has stimulated the erection and maintenance of numerous institutions scattered throughout the world? Constipation, chronic intestinal stasis, and its effects! As a surgeon, I admit the excellent results of a course of treatment at such places, where the general tone of the individual and the tone of his bowel are enticed on to something like a normal level. But these results are only temporary unless the patient changes his mode of life. I claim that surgery can produce more lasting effects and render repeated visits to these institutions less necessary or indeed make them unnecessary altogether. Surgery can make it easier for the individual to keep up the tone of both his bowel and his abdominal wall, which is the crux of the situation, so that he can dispense with special belts and so forth; that it will make him feel more keen to indulge in that exercise which is essential for his well-being; that indeed, it will break the vicious circle at work within

*An address delivered at Ottawa, on November 23rd, 1923.

†Developmental adhesions affecting the lower end of the ileum and the colon, *Aberdeen Univ. Press*, 1912.

Abnormal intra-abdominal developmental adhesions, *The Lancet*, May 10th and 17th, 1913.

Chronic intestinal stasis, *British Medical Journal*, Jan. 24th, 1914.

him. I do not, however, wish to speak much of chronic constipation and its general metabolic effects—rather would I discuss today the anatomical conditions which usually lead to it and some of the intra-abdominal lesions which I feel sure are in a large measure due to it.

Stagnation in the colon is not always accompanied by constipation. In some cases patients state that the action of the bowels is regular. There may indeed be diarrhoea from time to time.

In my opinion, in the majority of sufferers from constipation, the causes of their trouble are to be found in the regions of the ascending colon and in the sigmoid mesocolon. The ascending colon "makes the pace" for the rest of the colon. Bad work by it is reflected along the remainder of the gut. But however natural the first part of the colon may be, its work may be frustrated by imperfections at its terminal part. Therefore attention must be given to both parts. The most frequent causes of trouble are developmental abnormalities, the evil effects of which are brought out by modern methods of living which reduce tone, especially of the abdominal muscles, and thus foster sagging of the colon owing to the effects of gravity when the upright posture is assumed.

In passing, I would draw attention to the fact that modern aids to work, whether in the factory, the field, the office or the household, nearly all obviate that necessity for frequent stooping which is so essential to the efficient working of our abdominal organs.

Students of my time were brought up in the belief that the usual arrangement of the caecum and more especially of the ascending colon is for them to be sessile organs, plastered, so to speak, on the posterior abdominal wall of the iliac fossa and flank.

On the other hand, observant surgeons of the present day regard the normal arrangement in patients whose abdomens they open, as being that in which the caecum and ascending colon are mobile, sometimes very markedly so, and are attached posteriorly in a loose manner by more or less filmy structures which are regarded by some as Jackson's membrane, by others as mesocolon, and by others again, of whom I am one, as a mixture of both, in which one or the other may predominate.

I do not believe that the old anatomist was inferior in observation to the modern surgeon, especially to the one who observes things through a small incision, and I have come to believe that the loose arrangement of the caecum and ascending colon is the primary cause of the trouble on account of which the surgeon opens the abdomen. The surgeon deals with an abdomen which has been abnormal from the first, and these abnormalities have resulted in the more or less definite lesion for which his aid is invoked. As a natural corollary I believe that the surgeon does not fulfil obligations to his patient if he does not deal with what was the original cause of the lesion. How often do we find that patients are not permanently relieved by such operations as appendicectomy? In quite a number symptoms may actually become aggravated.

How does this anatomical arrangement, which is so frequently found by surgeons come about?

During development, the caecum ordinarily descends to the iliac fossa, and the free, movable ileum, provided with a mesentery, enters the inner aspect of the colon just above the caecum. The sessile ascending colon tracks upwards and slightly outwards to the hepatic flexure where the bowel turns into the transverse colon. The ascending colon is moored by loose areolar tissue and a reflection of peritoneum to the anterior surface of the iliacus and quadratus lumborum muscles and to the lower part of the right kidney.

In the majority of surgical cases, as I may venture to call them, the ascending colon is much more mobile. It may possess a modified mesocolon, and Jackson's membrane is more or less well marked. In a large number of these cases, what is known as Lane's terminal ileal membrane, is present in greater or less degree.

I shall give you my explanation of these conditions and you will find in it sufficient reason for the great variety of arrangement which occurs in this region.

Fairly early in foetal life, the caecum reaches a position under the right lobe of the liver. At this time, the right extremity of the omentum, which usually becomes attached above to the posterior abdominal wall and the under surface of the liver adjacent thereto, may ensnare

and hang up the cæcum and first part of the colon and may prevent their normal descent to the iliac fossa. The attachment to the abdominal wall may extend for several inches below the liver.

Usually, however, the cæcum descends and as it does so, the right extremity of the omentum becomes drawn out into the veil-like structure which goes by the name of Jackson's membrane. When one considers the variability of attachment of the part of the omentum which gives rise to this structure, both in extent and in density, one does not wonder at the marked variations which occur in the attachments and arrangements of Jackson's membrane.

Frequently the appendix, to greater or less extent, is ensnared by it in foetal life while it is still situated just below the liver. In such cases, when the cæcum descends, the appendix, if largely involved, is prevented descending to the same extent and comes to occupy a retro-colic position. In a large number there may be only a part, usually the proximal part, of the appendix involved in this adhesion. The appendix may then descend *pari passu* with the cæcum, but, as one very frequently finds, remnants of the membrane remain attached to it. These limit the mobility of the appendix so that when the cæcum is unduly mobile or unduly dilated, the appendix becomes kinked and as a result may become inflamed. I believe that the majority of cases of appendicitis are due to these and other developmental adhesions limiting its mobility. I propose to deal with this subject more fully in another paper.

There appears to be almost a special time during foetal life when fusion of certain opposing surfaces tends to take place. This fusion results for example in obliteration of the spaces between the peritoneum lining the posterior surfaces of the ascending and descending parts of the colon with their corresponding mesocolon and that lining the posterior abdominal wall. If these parts are not in their proper position at the proper time, fusion may be postponed until early childhood or may not take place at all. Other parts of the bowel, as I have hinted, may become adherent in their place. Thus, if the cæcum and ascending colon are held up, even only for a time, under the liver, they may lose their chance, so to speak, of forming their normal attachments to the

abdominal wall. They may descend without becoming adherent at all. In such a case, if the lower end of the ileum with its mesentery, has likewise remained free, we have the condition in which both ileum and ascending mesocolon are each provided with a long mesentery. This predisposes to volvulus formation and other derangements as occurred in a case on which I operated a few weeks ago.

Usually, when the cæcum hesitates in the subhepatic region, the lower end of the ileum and its mesentery, both or one, become more or less intimately fused with the posterior abdominal wall in the area which should have been occupied by the ascending colon. I have observed this arrangement on several occasions. If this occurs, if and when the cæcum descends, the ileum has to be pushed in front, but, in an obstinate way, it holds on by the adhesions which it has acquired. In the long run the cæcum as a rule asserts its right of position, and then we usually see the ileum in approximately its normal position but limited more or less in mobility by the persistence of these connecting adhesions, which form the so-called Lane's terminal ileal band or membrane. During its descent the ileum is compelled to rotate. Ordinarily, in these circumstances, it is rolled downwards in its long axis. The ileum may lag behind and enter the large bowel on its posterior aspect or even lie, more or less twisted, buried behind the peritoneum, as in a case described by the late Dr. Garrow.

The cæcum and first part of the colon have meantime drawn out their omental connections in the form of Jackson's membrane but have failed to establish properly with the posterior abdominal wall the connections ascribed to them by anatomists. Thus we have associated very frequently a mobile cæcum and colon, a Jackson's membrane, and a Lane's terminal ileal membrane.

The hepatic flexure of the colon may be well slung or may be mobile. The sling is formed by the right extremity of the omentum. A short sling may cause kinking of the flexure. This angulation becomes more marked when the cæcum drops. I have referred to the variable and sometimes wide upper attachment of this right portion of the omentum. The gall-bladder, under surface of the liver, and indeed the adjacent *anterior* abdominal wall may be

implicated. When the caecum descends these attachments are drawn out into the form of more or less well formed bands or filaments. These bands can be described as ascending from the colon and, spreading, affect adjacent organs to a variable extent. Thus they may stretch

over the gall-bladder, affecting especially the ampullary part which is pulled upon and becomes dilated. Another slip of this modified omentum may stretch over the front of the first part of the duodenum and merge in the gastro-hepatic omentum. Slips to the under surface of the right lobe of the liver are frequent.



FIG. 1.—Caeca-colo-plico-pxy. Shows method of dividing posterior parietal peritoneum and Jackson's veil.

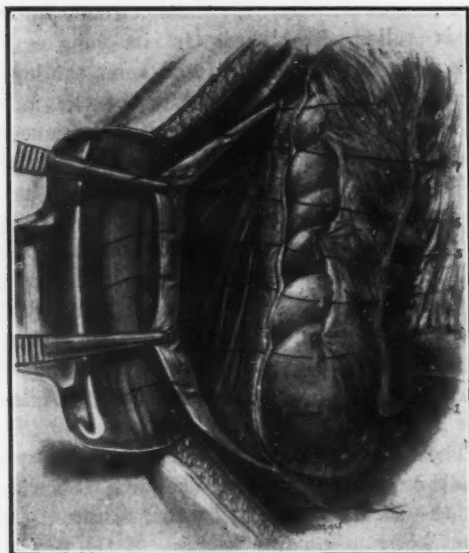


FIG. 2.—Shows insertion of sutures, through anterior longitudinal band, haustra, external longitudinal band of colon and outer flap of peritoneum. Note the insertion of the upper two sutures so as to avoid angulation of colon when they are tied. The fat and connective tissue are swept off the posterior abdominal wall so as to encourage strong fixation.

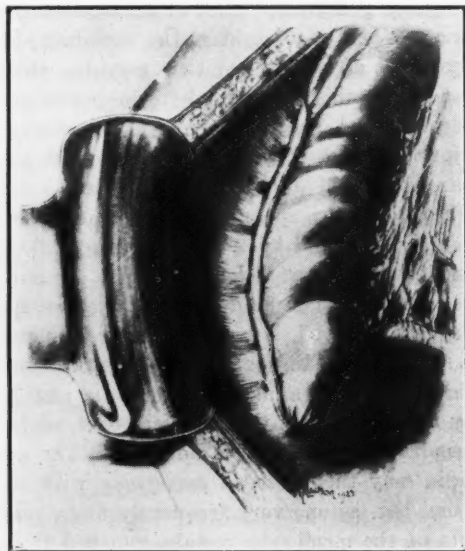


FIG. 3.—Operation completed. The lower few inches of the ileum are arranged to run smoothly from below up over the brim of the pelvis.



FIG. 4.—Mesosigmoid adhesions, causing kinking of sigmoid. Incision made through white line (Toldt's). Shows how easily ovarian vessels may be implicated.

Drag on such bands may provoke pain, local or referred, and assertive and persistent in conformance with the severity and persistence of the drag. It may lead to stagnation in the gall-bladder, and cause symptoms in some cases indistinguishable from actual disease of that organ. It may well be a prominent factor in the formation of gall stones.

I have many times noted the effect of downward drag on the band which crosses the duodenum—it causes blanching of that part of the bowel in which one most often finds duodenal ulcer. I have repeatedly found duodenal ulcer associated with such a band. It is likely to cause partial obstruction there so that gastric symptoms or even gastric ulcer may be provoked.



FIG. 5.—Diamond shaped area produced when sigmoid kink is undone, by pulling on sigmoid as shown. Sutures inserted.

The right colic vessels form another factor in the production of symptoms. These are branches of the superior mesenteric, which supply the caecum and ascending colon. They may be so pulled upon by a loaded and dropped caecum, that the effect passes to the superior mesenteric vessels themselves and the sympathetic plexus in the neighbourhood. In this way there may be profound reflex phenomena involved—frequently there are complaints of marked though vague abdominal discomfort. Further, owing to the pull communicated to the superior mesenteric vessels as they cross

the third part of the duodenum, constriction of that part of the bowel may be caused and result in what Wilkie of Edinburgh has described as chronic duodenal ileus.

I want you to bear all these connections in mind while you consider what may result from stagnation of the contents of the caecum and ascending colon. I want you to appreciate the extraordinary variations which may be found. The widely differing combinations of abnormalities which at first sight may appear complicated, become clear when one ponders a little over the probable method of their production.

The caecum and colon are placed at a disadvantage in comparison with other parts of the bowel in that they have to act against gravity when the erect posture is assumed.

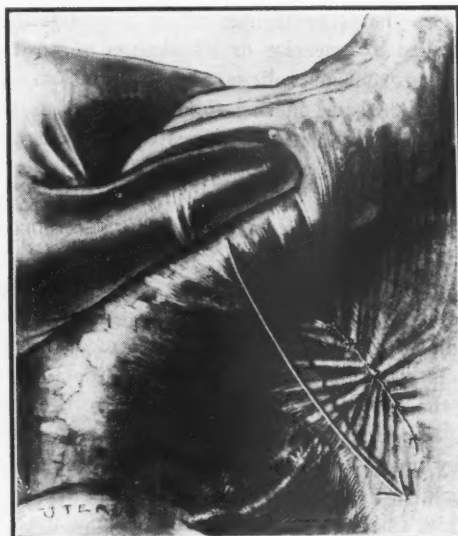


FIG. 6.—Sutures tied. Line of sutures at right angles to that of Toldt's white line. Arrow indicates direction of replacement of sigmoid.

Their undue mobility is in many cases a direct hindrance to their motility in virtue of the angulations which it may cause, as well as by the amount of sagging which it permits. Stagnation of their contents is therefore bound to occur. As I have already said, I believe that this first part of the colon is ordinarily its most important part in that it makes the pace for the rest of the colon. The fact that at certain parts kinking may occur because of undue shortness of corresponding parts of Jackson's membrane makes the mobility of the caecum and colon responsible in great part for stag-

nation of their contents. These contents may be weighty faeces or distending gas. One such short stretch is what Lane calls the "parietocolic fold or band." I find that this band is found fairly often in individuals of short, "stocky" build. It may lead to well-marked local discomfort. When dilatation of the part below the shorter piece of membrane occurs this dilated part tends to swing forwards and inwards and therefore increases the angulation. Distension of this part causes dragging on adhesions—thus, as I have suggested already, symptoms of appendix trouble may be caused, which may disappear when the dilatation is relieved. Pressure on this bulging part will tend to straighten out the kink. It is therefore evident that the wearing of a visceroptosis belt, pressure or manipulation by the hand or tightening of the abdominal muscles by exercise or by change of position will prevent or relieve such angulation. On the other hand in this type of case, it is also evident that owing to persistence or onset of dilatation, symptoms may continue or even originate when the horizontal position is assumed and the abdominal muscles are relaxed.

In the erect posture when the caecum and colon are weighed down by stagnating contents, a pull is set up on all the adhesions radiating from the affected part of the colon. Thus symptoms may be confined to the area of the caecum and colon alone, or by the drag on adhesions spreading from the upper end they may be referred to the duodenum or stomach, or to the gall-bladder or liver, or again, as I have indicated, disturbance may be caused in the appendix or at the lower end of the ileum or yet again by irritation of the solar plexus or obstruction of the duodenum by drag on the right colic vessels. Symptoms vary from time to time according as one part or adjacent viscera is affected more than another, or again they may vary according to the general health or tone of the patient himself, or of his abdominal wall or of his alimentary tract. You will readily appreciate that patients suffering from such trouble are unsatisfactory. They may complain of one thing at one time and another thing at another time, their symptoms may resemble but not altogether conform to those of definite well recognized lesions; occasionally they feel wonderfully well and then

without very apparent reason they feel out of sorts. Medicines do not have the looked-for effect or else only for a short time in an unsatisfactory way. So the sufferers are labelled "hypochondriacal"—a good name for them—their troubles emanate from the hypochondrium and adjacent parts!

So much for the local or abdominal, physical and reflex effects of over-filling and stagnation of the caecum and ascending colon. The third very important effect I have referred to is exerted on general and special metabolism by the toxic absorption from their stagnant contents which goes on. I have said that the first part of the colon makes the pace for the rest. Does absorption occur easily and rapidly in one part more than another?

Sir Arbuthnot Lane has done great service in pointing out the evil effects of toxic absorption from the colon. The functions of any part or organ of the body may suffer. You will have appreciated that I entirely disagree with Lane as to the origin of the membranes and other adhesions which are associated with stasis. He persists in saying that they are the *results* of stasis, that they are apparently due to an effort on nature's part to neutralize the drag of an over-loaded bowel. To quote his words, they are due to a "crystallization of the lines of strain." Yet nowadays he deliberately cuts them in order to relieve the constipation. No more need be said! I shall not dilate further upon the general symptoms. Lane's original descriptions of them have not been surpassed. They are classical.

Lane has recently laid particular stress upon what he calls "the first and last kink" of the intestinal canal. The "first" because it is, according to him, the first to appear—the "last" because it occurs near the lower end of the colon. This kink is caused by the presence of, in my opinion, developmental meso-sigmoid adhesions, which *usually* do not cause prominent symptoms until fairly late in life. Lane ascribes the greatest importance to this kink as a result of intestinal stasis, and incidentally in causation of cancer in the bowel or elsewhere. He divides it to relieve stasis and to help in preventing cancer! These meso-sigmoid adhesions are found at all ages. When I open an abdomen, I like to find out whether or not they are present. If they are causing or are

likely to cause trouble, I treat them in the way I shall demonstrate shortly by lantern slides.

I would impress on you again that symptoms, referred to various organs and varying parts of the abdomen, are often vague and often capricious. They may mimic well-accredited lesions of gall-bladder, stomach, duodenum, appendix or colon, but on close investigation it is found that the symptoms do not exactly tally with those of the real disease. At the same time, I believe that the "real disease" of these organs is often due to this "ascending colopostosis" as I venture, for brevity's sake, to call the condition. Therefore, I urge surgeons to treat it at the same time as they treat these other lesions.

It may be interesting to record that within the past 18 months I have deliberately left 12 cases of duodenal or gastric ulcer untreated save for division of adhesions over the duodenum and the performance of colopexy. These ulcers were all palpable; they were demonstrated to assistants and onlookers at operation; some of them (gastric) had been revealed by x-rays as definite craters. These were not demonstrable after operation, in one case even within six weeks. All the patients have been entirely relieved of their previous symptoms except in one case—a woman with a deep ulcer on the lesser curvature near the cardiac orifice of the stomach. I should have liked to have excised her ulcer but the difficult technique involved and her frail condition tempted me to leave it in view of my experience of cure in other cases. Six months after operation she expressed herself as relieved of all her symptoms except that of pain immediately after taking food. Of course, it may be argued that cure of these ulcers is not permanent—symptoms often are periodic—time will show.

I wonder whether jejunal ulcer and recurrence of duodenal ulcer after gastro-enterostomy are the results of inattention to this condition of the colon.

I have been greatly interested in the rapid and satisfactory recovery which patients as a rule have exhibited after operation.

In a vast majority evacuations of the bowel have in a short time become regular, either spontaneously or in response to slight aperient stimulus. The patients gain fresher complexions, digestion improves, headaches and

pains in joints disappear, and they become livelier and more capable, interested in life again, often in remarkably short time.

I have seen some remarkable cases of gain in weight after operation, when loss of flesh had been a pronounced symptom. One such case was that of a young lady of 18, who had steadily lost weight from no apparent cause, in spite of all sorts of treatment, including the swallowing of extracts of various endocrine glands. She weighed 60 lbs. before operation. In 4-5 months thereafter, she had increased her weight by 50%. Another case was that of a farmer 63 years of age, who had lost 42 lbs. in three months and was referred to my care as suffering from cancer of the colon. In three months after operation he had recovered the weight he had lost. There was no cancer.

The disappointing results of simple appendicectomy in a large proportion of cases is widely known. Patients may be well for 2-3 months after removal of the appendix, but when the beneficial effects of rest, special diet and hospital treatment have passed off, they suffer from their old symptoms and indeed may suffer more severely. I have done the operation which I am going to describe now in a large number of such cases with eminently satisfactory, and in my experience, permanent results.

I am afraid that time will not permit of the description of certain physical signs.

Before I proceed to demonstrate the few lantern slides I have had prepared, I wish to say that the opinion of men who state that they perform this operation through small or gridiron incisions, is not worth regarding. A satisfactory fixation of the colon can not be done through a small incision, in fact, the limited fixation of caecum or colon which can be done through a 2-inch gridiron incision will possibly make the patient worse than before. I have seen this happen in the hands of reputedly good surgeons. Little wonder that the operation is said by many to do no good. If done at all it must be thoroughly done. I think that Wilms of Heidelberg should get the credit for the operation. I described his operation in a paper published in *The Lancet*, May, 1923. I have modified Wilms' operation a little and believe that I can get more permanent results thereby.

I do not think that Waugh's operation, described in 1920, is quite so thorough. I do not attempt to moor the transverse colon as Waugh does. I believe this to be unnecessary.

In conclusion I should like to say that I have had greater satisfaction from this operation of caeco-colo-plico-pxy than from any other excepting those which are done to save life and which turn out successfully.

REFERRED PAIN IN ANEURISM

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IN works on internal medicine the significance of referred pain is rarely given consideration. On account of its importance in many instances the following cases are deemed worth putting on record.

Case 1.—A. B., aged about sixty, a restaurateur, had been troubled increasingly with distress apparently from hyperacidity accompanied by pain in the lower praecordial region especially in the 5th and 6th intercostal spaces. During rest in bed the pain was relieved, to return on moving about or other exertion. Careful physical examination revealed nothing abnormal except a rather high gastric acidity. The recurrence of the pain could not well be attributed to a gastric cause as active, out of-door life should have improved digestion and therefore relieved the pain. Blood pressure at rest was not unduly high. The pain apparently recurred with the increased blood pressure associated with exercise and therefore caused by it. Closer investigation proved this to be true. Any sharp exercise always excited the pain which was made greater in proportion to the severity of the exercise. Viewed from this standpoint, it seemed evident that the pain was due to a cause acting on the 5th and 6th nerves as they emerged from the spinal canal, and that this irritation was increased by exercise; in other words the more strenuous the exercise the greater the pain, whereas vigorous passive movements did not so act. This being the case, the inevitable conclusion was that the pressure on the nerves must be due to a vascular cause, and that therefore there must be a small aneurism of the aorta, and the diag-

nosis was made on this basis. Naturally the man was much perturbed by such an opinion and he refused to accept it and sought advice elsewhere. He went to a leading hospital in the United States and was put to bed, prompt relief following. He was assured that the gastric irritation was due to excess hydrochloric acid in the gastric contents and a good prognosis given. He then left the hospital quite relieved, but very shortly with his exertion the pain recurred and was as severe as before his care in the hospital. He then went to Europe and consulted eminent physicians in Paris, London and elsewhere with virtually identical results. In the meantime, his suffering was steadily increasing. He returned to Montreal, his former home, and here it was found that there was a large aneurism in the lower part of the left side of the chest. He did not long survive. The failure of all these subsequent consultations was clearly due to lack of careful observation—the men consulted, at least some of them, were eminent and rightly so regarded. However, eminence does not condone lack of care.

Case 2.—A second case is equally interesting and a diagnosis was made on the same principles. A man about seventy, of very nervous temperament and strenuous habits in business. He had led a very active, clean life. His trouble began with slight occasional pain about the right shoulder. In time the pain became worse, especially at the end of the day's work, and was referred to the 3rd and 4th intercostal spaces. The pain ceased while at rest and his nights were comfortable but it recurred during

the day being worse with the more active exertion. The third dorsal spinous process was slightly deflected but not tender. Flexion, extension and rotation of the spine caused no discomfort. Later the pain recurred with less and less exertion and always fixed in the 3rd and 4th interspaces. Rest always relieved it. There were no physical signs to indicate the cause of the pain which could always be excited by moderate exercise but not with passive movements.

The diagnosis lay between caries of the vertebrae and aneurism of the descending arm of the arch of the aorta. The fact that no passive and quiet voluntary movements caused pain on any occasion was fair evidence against caries. The deflected vertebral spine was, with little doubt, congenital. That the cause was related to the aorta was rendered probable by the recurrence of pain by an activity causing increase of blood pressure, the relief following rest and falling pressure, by fixity of pain in the 3rd and 4th intercostal nerves, pain that could scarcely arise from spinal caries, which would cause pain located in and about the vertebrae affected and not referred to the peripheral nerves, and the improbability of caries in an otherwise healthy man of advanced age.

The man consulted another physician; he regarded the trouble to be caries, chiefly, I think on account of the deflected spinous process. As the man was going to his former home in Scotland, he referred him to the Professor of Medicine in Edinburgh University who agreed to the opinion of caries and ordered a spinal support. The man was relieved and this was attributed to the support—but doubtless owing to the quiet life away from business and the psychical effect. Shortly after his return home, the pain recurred and I advised the removal of the support. A few weeks later he suddenly became faint and severe prostration followed. Complete rest was enjoined by a physician who saw him in my absence. The symptoms were probably due to a slight rupture of the aneurism and possibly slight haemorrhage. Although the importance of quietness was impressed on him, he went to the toilet next morning, even refusing his wife's aid, and on returning to bed, he suddenly collapsed, death following instantly. The rupture doubtless, became complete with some haemorrhage, not

necessarily large as the sudden loss of little blood from a rupture so near the heart would lower the pressure in the ventricle and stop its action in diastole.

Case 3.—It will be of interest to detail the particulars of a young Chinaman brought to a clinic I had in Calgary in 1922. He had severe pain in the whole anterior surface of the left thigh. The thigh itself showed no sign of disease so that the cause must be sought at the origin of the lumbar plexus. There was found a large aneurism of the left side of the aorta. It was clear that it pressed on and irritated the root of the plexus and the pain was referred to the terminals of the plexus in the thigh. In this case the diagnosis was not attended with any difficulty. It is an illuminating explanation of the pain in the two cases above detailed.

These two cases are interesting for the marshalling of facts and more so for the inevitable diagnosis arrived at, a diagnosis discarded by the many eminent men consulted at a later date when the advance of the disease should have made a correct diagnosis more easily arrived at. These cases occurred before the days of the discovery of the x-ray, and their investigation had to be made and conclusions arrived at on a purely clinical basis; conclusions which were adhered to with confidence to the end, notwithstanding the adverse opinions given by later consultants.

Apart from the significant facts of the cases themselves, the most important lesson to be learned is that in the majority of cases of all kinds a correct diagnosis may be made on facts obtained by an accurate history and searching physical examination; of these two the clinical history is the most important. There may be nothing significant found on examination, but the history always gives some valuable information. In all clinics, if the history and examination were made and, after searching study, a written diagnosis required before recourse to any advanced laboratory assistance, x-ray especially, it would lead to much better histories and examinations and, what is more important still if that is possible, deeper thinking and better judgment of values. There is probably nothing that is doing more damage to efficiency generally than recourse to laboratory assistance, other than the ordin-

ary examination, such as urine and blood, necessary in all cases before the clinical examinations are completed. This applies especially to the x-ray laboratory. Its results are *shadows only and may, like all shadows, be very bizarre and misleading, especially in other than adept*

hands. One of the most efficient x-ray specialists to be found anywhere said recently that premature resort to x-ray examination is doing great harm to the efficiency of the profession, because it is made the substitute for the physician's proper examination of the patient.

THE USE AND ABUSE OF ENDOCRINOLOGY*

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IT is very difficult to hold a balanced viewpoint about endocrinology. One can easily become over-enthusiastic with regard to the rôle of the glands of internal secretion in both diagnosis and treatment, as so many have done, or one can go to the other extreme, stimulated by the many published vagaries one sees in the journals, and grow skeptical that the endocrine glands play any important rôle whatsoever except in a very few well-defined conditions. Somewhere between these two lies the happy mean that should be adopted with a readiness to shift back and forth in viewpoint as real discoveries add new knowledge. A critical attitude of mind is ever a valuable asset to the medical man, provided criticism does not partake too entirely of the destructive phase. Criticism should not imply too great skepticism. To doubt is desirable, but to fail to recognize adequate proof or even suggestive observation is fatal to progress, and progress is essential to improvement in medical practice. All of this applies particularly to endocrinology.

Animal experimentation and the study of pathological anatomy have demonstrated beyond a doubt the very important rôle played by glands of internal secretion in the human economy. They have revealed a very great complexity of function for them. Much is known but far more requires elucidation before any adequate conception of the detailed processes

presided over by the glands of internal secretion can be had. In the reports of physiologists and of pathologists there is much that is suggestive for clinicians, but it is dangerous to use more or less incomplete knowledge of the complex functions of glands of internal secretion to explain, and particularly to treat, complicated clinical syndromes about which we have accumulated a vast store of theories but a minimum of known facts.

Every clinician sees many patients with evidently disturbed function of both mind and body, who on physical examination depart but little from the normal. How easy it is with such to say that this or that gland of internal secretion is hyperfunctioning or hypofunctioning or dysfunctioning when there is some superficial resemblance in the symptom complex to changes noted in animals when some gland of internal secretion has been in some way disturbed. How much easier is it to say that several glands in the patient are disturbed in function when in the clinical complex there are partial resemblances to what is obtained in different animals as a result of the injury or removal of different glands of internal secretion, or to say that there is a disturbance in the inter-relationships that appear to exist between the functions of several glands. Therein lies a great temptation to theorists in medicine, a temptation that, in large part, is responsible for the present confusion that exists in clinical endocrinology.

It must be recognized that much of what the physiologist has described of the function

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of glands of internal secretion cannot be applied as yet to clinical endocrinology and that such application, as is made, must be controlled by the careful, accurate observation of skilled clinicians studying their patients thoroughly and recording their observations in minute detail. There is a great need to-day for just such observation on a relatively few patients rather than for the superficial observations on larger numbers of patients receiving gland extracts of one sort or another, such as are more commonly reported.

To obtain knowledge of the glands of internal secretion in man we have four avenues of approach: (1) to construct a symptom complex to correspond to pathological changes observed in one of these structures and to prove the constant association of this symptom complex with such changes; (2) to note the effect of giving a gland substance, particularly when there is evidence of lack of function of this gland; (3) to observe the changes resulting from the removal or destruction of a gland of internal secretion; (4) to apply inferentially to man, knowledge of the physiology of glands of internal secretion, obtained in the main by animal experimentation involving injury to or removal of one of these structures.

Of these four, the first, constructing a symptom complex corresponding to pathological changes, etc., has furnished us for man the most accurate and most helpful means of obtaining knowledge of internal secretion, especially from the point of view of diagnosis. Examples of this are Addison's disease from tuberculous or other type of lesion destroying the adrenals, exophthalmic goitre from hyperplastic changes in the thyroid and myxedema from degenerative changes, acromegaly from pituitary hyperplasia and diabetes from lesions of the islands of Langerhans. This method has yielded no really satisfactory knowledge of the pineal, thymus, testis and ovary.

The second method, the effect of giving gland substance, has given accurate knowledge for man in only two instances, namely, thyroid in myxedema and cretinism, and insulin in diabetes. In these the evidence is nothing more than confirmatory of knowledge obtained by the first method.

The third method, removal, has given diagnostic knowledge of the thyroid in relation to

myxedema, the parathyroids in relation to tetany, the ovaries in relation to menopausal changes and the testes in relation to eunuchism.

The last method, inferential from animal experimentation, has yielded knowledge of function of glands of internal secretion, much of which can be definitely stated to hold good for man as being confirmed or in accord with knowledge obtained by the other three methods: When we go beyond this we get on doubtful ground, because what holds good for an animal may not be true for man and a symptom complex in man may resemble changes produced in animals without being identical, and anyhow the cause in man may differ from the cause of similar manifestations in the animal. It is in the inference from animal to man that the clinician goes astray, and the more complex and indefinite the syndrome in man the greater the danger of error.

In all of these methods there is a constant danger of error from false interpretation of results. This is particularly true when it comes to the results obtained by feeding gland substance or gland extract. Here two sources of error are possible; the gland substance may have become inert in the process of preparation and absorption, or it may produce a result but not by reason of its acting as a substitute for any gland deficiency in the recipient. A striking example of this latter is adrenalin or epinephrin in bronchial asthma, a condition in which there is no evidence of any lesion or disturbed function of the adrenal gland.

With the above in mind we can recognize certain very definite complexes in man as the result of disturbances in definite glands of internal secretion. Such are the acromegalias, gigantism, lipo-genito-dystrophies of hyper- and hypo-pituitary function; the exophthalmic goitre, hyperfunctioning thyroid adenomata, myxedema and cretinism of hyper- and hypo-thyroid function, the Addison disease complex from hypo-function of the adrenal, the eunuchism from testicular destruction, the menstrual and menopausal changes from ovarian source, parathyreoprivic tetany, and diabetes from lesions in the islands of Langerhans. The pineal has a much less well authenticated symptom complex associated with it and of the thymus, placenta and mammary tissue as glands of internal secretion we really know nothing.

Summing this up there is a definite clinical picture associated with hypo-function of the pituitary, thyroid, adrenal, ovary, testis, parathyroid and pancreas (islands of Langerhans). With hyperfunction of but two, thyroid and pituitary, do we have a recognized clinical picture. For the hypofunction group the effects of slighter degrees of disturbance are recognized definitely for but three, thyroid, pituitary and pancreas (islands of Langerhans); for the others, adrenal, ovary, testis and parathyroid, until there is practically complete destruction or removal, we recognize no definite clinical result. So from the point of view of definite diagnosis, glands of internal secretion do not play, after all, any very large rôle; we have to consider hyperfunction in two, thyroid and pituitary and hypofunction in three, thyroid pituitary and pancreas (islands of Langerhans) with added symptomatology for almost complete destruction in four more which necessarily can be but symptoms of the end stage of a pathological process or of surgical removal and so can play but a minor rôle in medical practice.

Now from the point of view of treatment we can deal with hyperfunction only by surgical reduction of the tissue or by destructive agents such as x-ray. For these methods of treatment we have only the thyroid and pituitary in which important results are obtainable. In the former, treatment is very satisfactory; in the latter much less so, requiring for surgery an unusual degree of surgical technical ability and so far yielding little by non-surgical methods.

For hypofunction there is theoretically a far larger field for therapy of non-surgical variety; surgery plays no part. Practically, however, thyroid hypofunction, and within the year, pancreas hypofunction are the only ones in which therapy is at all satisfactory.

In hypofunction, therapy must be substitutional (replacement) or stimulative. The latter is apparently of very little effectiveness and so we are limited by our ability to prepare a gland substance that retains the gland activity and leaves it in a form that can be introduced into the body without change in quality, i.e., be absorbed in a way to retain its properties. So far efforts to transplant gland tissues have been of no therapeutic avail.

Thyroid substance is most ideal for therapeutic purposes because, prepared in a variety

of ways, thyroid substance retains its activity in a form that can be introduced into the body by mouth and be absorbed without losing this activity. Hence we obtain very striking results by giving thyroid gland products to patients with symptoms of thyroid deficiency. Thanks to Banting and his co-workers, we now have a pancreatic substance, insulin, which, given hypodermically, has a definite replacement effect on carbohydrate metabolism. There is much doubt as to any replacement effect from preparations of the adrenal, pituitary, pineal, parathyroid, ovary and testis.

So you see how limited is well authenticated gland therapy, even when dealing with recognized disturbances in single glands of internal secretion. In this limited field the results are very striking and there is much hope that the field will be extended by new discoveries as so recently has been done by the discovery of insulin, but physicians must wait patiently for these discoveries. The therapeutic results, so far obtained, though concerned with very few gland substances are so remarkable that it is worth while that experiments should continue and that new preparations be tested out. What we know of the influence of glands of internal secretion on body processes fully justifies the belief that, could the active principles of more of the glands be prepared in such form that they could be introduced into the body without losing their activity, we would have new therapeutic agents of very great value. Because of so many failures, were we to become skeptical of any new claims and stop testing them, progress would inevitably end. At the same time in testing them, careful observation and sane deduction become essential if we are not to be led astray as so many have been in the past.

Take as an example ovarian extract or corpus luteum substance. Animal experimentation and observation of the human after removal of the ovaries show a clear relation between some internal secretion of the ovaries and menstruation and menopause. A recent review entitled, *An Appraisal of Ovarian Therapy*, shows that since its first trial in 1896 very little progress has been made. After 27 years of trial no efficient ovarian substance has been prepared, efficient in the sense that introduced in the body it produces any definite change. There is surprisingly little real knowledge of

the pharmacological action of available ovarian extracts. Doubt has even been raised as to whether the effects from hyperdermic use of some of them are specific at all and not merely a non-specific protein effect. Though extensively used, accurate, careful, clinical reports are few. Such clinical reports as exist, are far from convincing. To-day there is really no satisfactory evidence of any real value from ovarian extract in any form in any disorder associated with malfunction of the ovaries. And yet an extensive advertising propaganda has caused these ovarian extracts to be given to countless women. I am not saying that they have no effect but rather that there is no clear knowledge based on clinical observation of what the effect is. Many of the claimed effects may be psychic; some are unquestionably imaginary. The point I wish to make is that the method used in regard to ovarian extract has gotten us but a short distance in a quarter of a century. Should not this serve to arouse caution in the medical profession about accepting vague claims and poor clinical observations as the basis of using any gland substance therapeutically? It seems to me that it should.

As to testicular substance, conditions are worse than for ovarian. Past use justifies no confidence in any efficiency for testicular extract.

Adrenal extract is in a somewhat anomalous position. As a means of substitution therapy there is no evidence of its efficiency and yet from adrenals has been separated a substance, adrenalin or epinephrin, of very great therapeutic efficiency. Curiously its therapeutic action has practically no relation to the function of the adrenals of the recipient of adrenalin. Adrenalin is effective in temporarily raising blood pressure and is particularly useful in relieving the bronchial spasm of asthma in patients with perfectly sound adrenals.

A somewhat similar situation holds for pituitary extract. There is some evidence for substitution effects with pituitary hypofunction, though these are not convincing. From pituitary, however, is prepared pituitrin, which like adrenalin, raises blood pressure. It also stimulates contraction of smooth muscle. In diabetes insipidus it decreases polyuria, but recently doubt has been thrown on the causal relation between diabetes insipidus and pit-

uitary disorder so this latter may not be a substitution effect of the pituitary extract, pituitrin.

In an endocrinologic sense we have then no real basis of knowledge for the use of extracts from the adrenal, parathyroid, ovary, placenta, testis, pineal and mammary gland when concerned with conditions resulting from disease or disturbance in but that particular single gland. For the pituitary there is some slight evidence of efficiency of gland substance in a substitution sense when there is definite hypofunction of that one gland. For hypofunction of the thyroid and pancreas we have very effective substitution extracts.

One difficulty in determining diagnosis and effectiveness of treatment lies in lack of definite tests to measure the efficiency of these gland substances or to indicate decreased function of any of the several glands of internal secretion. For the thyroid, basal metabolism determinations give a very satisfactory measure of both hyperfunction and hypofunction and are of the very greatest value in both diagnosis and treatment. In marked pituitary disturbance there is usually a moderate change in basal metabolic rate, but here it is of not so great practical value because the condition is usually quite evident without knowing the basal metabolism and slighter degrees of pituitary disturbance, in which diagnosis is uncertain, show too little change in rate to be of diagnostic value. It is to be remembered that with determinations of basal metabolism there is a very considerable range that may occur in normal people and so slighter changes are of very little help with regard to the diagnosis of thyroid or pituitary disturbances. In the treatment of thyroid hypofunction the basal metabolic rate is the surest guide to the proper dosage of thyroid extract.

For disturbances in the islands of Langerhans glycosuria is an invaluable index for both diagnosis and treatment. Along with blood sugar determinations we have a sure measure of the effect of insulin, the substance that contains the internal secretion of the islands of Langerhans.

For none of the other glands of internal secretion have we any satisfactory test for their hyper- or hypo-function. Such tests as have been described, other than the two already

mentioned, are of questionable significance, and help neither in diagnosis nor treatment.

So far I have confined myself to discussing conditions in which but one gland of internal secretion is believed to be disturbed. When it comes to pluriglandular disturbances and changes due to shifts in the interrelationships believed to exist between the several glands of internal secretion, so great complexity is introduced that it is well-nigh impossible to make application to clinical use of such knowledge as we have. It is here that theory has run riot and the chief abuses of endocrinology have entered in.

Let me cite an example from a recent book on endocrinology to show the extremes to which authors have gone in theorizing. "The amount of post-pituitary secretion reaches a certain concentration. This in turn stimulates the thyroid and adrenal medulla. They in turn activate the ovarian cells, which congest the uterine glands and lining membrane. The follicle bursts, the ovum is discharged and wanders, the uterus waits and wonders. Nothing happens, the curtain is lowered, the scenery is removed, the actors revert to civilian clothes. That is the story of menstruation."

That sort of talk becomes responsible for multiglandular prescribing, using combinations of gland extracts whose effect when given alone is, as I have shown, for the most part unknown. You will recall that we, to-day, get definite effects from but two gland extracts in a substitution sense for gland deficiencies, namely, thyroid extract and insulin, and possible effects from pituitary and ovarian extract. How can we expect to understand the results from shotgun combinations of a group of unknowns as so commonly are advertised to you in your daily intake of medical circulars from manufacturers of gland extracts? The answer is we do not, and there is no sane reporting of careful clinical observation for our study. In most of the

cases reported there is no real diagnosis, no real understanding of what is the matter with the patient and no real evidence that the unknown condition has been helped by the gland extracts given whose therapeutic actions are really unknown. Herein, let me again emphasize, lies the great abuse of endocrinology.

It is of great interest in connection with pluriglandular therapy recommended for conditions regarded as the result of disturbances in such glands as thymus, pituitary, ovary and testis, etc., in various combinations to note what a large proportion of preparations contain with other gland substances some form of thyroid preparation suggesting that such results as are obtained are due to the thyroid, which as we have already seen, is the one gland extract of definite potency. In a recent list of preparations advertised about two-thirds of the combinations of endocrine glands offered for sale contained thyroid extract. That thyroid admittedly is needed so often should cause the pluriglandularists to pause and ponder before attributing much effect to the accompanying ingredients.

At present it would seem to me that the abuse of endocrinology is out-weighting the use among our practitioners and that we need badly a return of keen, critical, clinical observation and study, which after all are the only means we have of up-building our knowledge of clinical endocrinology. In this attitude of mind we can safely use for our patients what is now known and be in a position to apply speedily new discoveries as they are made. The recent discovery of insulin stimulates a renewed hope for other discoveries of great value. Until they come, let us go along satisfied to use sanely and safely the facts of endocrinology and keep aloof from the theories of fanciful brains that would explain to us much of the unknown in clinical work by applying theories in large part based on the unknown realms of endocrinology.

SUCTION DRAINAGE IN ACUTE EMPYEMA

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THE application of suction drainage following operations for acute empyema has been advocated periodically for many years by various surgeons in attempting to improve their results. This disease has had a mortality up to 20 and 30 per cent. in adults in recent years, while a further percentage of cases has become chronic, resulting in a condition too often defying the best efforts of the surgeon, and the unfortunate patient is finally subjected to a mutilating operation of the Schede or Estlander type. We must therefore agree that our treatment of empyema cannot yet be called standardized.

We were formerly accustomed, in treating pneumococcal empyema, to make a good dependent opening in the chest wall, insert a large calibre drainage tube and expect that good drainage would eventually result in closure of the cavity, disappearance of the infection, and cure. This treatment is in accord with our treatment of abscesses generally, but two special factors are present here. The side of the cavity formed by the chest wall is rigid and the lung which normally fills the cavity is partially collapsed. Closure of the cavity is aided by bulging inwards of the mediastinum, by elevation of the diaphragm and by flattening of the ribs, while the lung is expanded by the extension of adhesions between the two pleural surfaces, and by the pressure of air in the bronchial tree during forced expiration. The action of inspiration in producing lung expansion is most important but is lost because of the free flow of air through the opening in the chest wall. Many schemes have been devised to compensate for this loss. Cotton has emphasized the point that the large pus soaked dressing which covers the thoracotomy opening acts as a good valve, allowing the pus to escape during expiration, but keeping the wound closed during inspiration, thus promoting expansion of the lung, and claimed that this was

an important element in the cure. Surgeons have introduced devices with varying success, to improve this valvular action produced during respiration.

Many devices have also been invented for the use of suction drainage. The idea has always been attractive, especially in those cases where expansion has been slow, and where, week after week, a large cavity has persisted with little change in size, but with the lung being constantly more firmly anchored in its contracted state by an enveloping layer of organized lymph, and possibly also with a developing fibrosis of the lung. The patient has been encouraged to play the monotonous game of blowing into Wolff bottles to help balloon out the contracted lung, and at the best closure has been much prolonged. A suction apparatus should take care of the purulent discharge and also create a negative pressure in the empyema cavity, helping the lung expand until the two pleural surfaces finally become adherent. The main difficulty has been to get a satisfactory air-tight union between the apparatus and the chest wall, and on this continent no such apparatus has been widely used.

Büla in Vienna first brought out a suction drainage for empyema. In his method a large catheter was introduced through an intercostal space into the empyema cavity through the cannula of a trocar. The cannula was then withdrawn, leaving the catheter in place tightly held by the soft tissues. Siphon drainage was then carried on, utilizing the column of pus in the drainage tube to produce the suction, the lower end of the tube being immersed in a bowl of solution on the floor beside the patient. After several days the catheter became loosened, due to pressure necrosis of the surrounding soft tissues and the air-tight union was destroyed. Perthes introduced a method of inserting a drainage tube furnished with a collar into the empyema cavity, through an

opening made by rib resection. The collar was cemented with collodion to the chest wall. Suction was obtained by fastening the drainage tube to a water faucet exhaust. Robinson obtained a tight closure by trephining a hole through a rib and screwing into this hole a threaded metal tube, to which a drainage tube was attached. This tube also became loosened by pressure necrosis and the rib was often split. Many modifications of these methods have been used, and during the recent war the Italians especially used the methods of Forlanini and Morelli. The drainage tube used by them was covered near the inner end by a fiddle-shaped jacket which was inserted into the wound after rib resection and inflated with air until an air-tight closure was obtained. Suction drainage was then established. The method is described by Davis and by Bastianelli.

The late war has shown us the value of Dakin's solution both in sterilizing empyema cavities and in dissolving the masses of coagulated lymph so often found. The usual method of two-hourly irrigations entails a lot of work and may be very annoying to the patient, who is constantly very wet with the irritating solution. Its results are certainly better than those obtained by simple drainage, but Carl Eggers of New York, states, after a large experience, that by its use it is not possible to materially shorten the course of acute empyema. It is also a fact that even with its extensive use in the military hospitals during the influenza epidemics, large numbers of cases drifted into the chronic stage. I believe that suction drainage, combined with daily irrigations of Dakin's solution, will improve our results in reducing mortality and lessening the percentage of chronic cases.

No suction drainage appliance is perfectly air-tight for a long period and, fortunately, it is an advantage to have an intermittent suction. It does much more than merely cause an expansion of the collapsed lung, for it gives us all the advantages of a Bier hyperaemia. It produces a hyperaemia in the empyema cavity, resulting in an increased flow of lymph which is soon seen in the altered character of the discharge, changing from a thick to a thin watery sero-pus. This flow of lymph decreases the absorption of toxins and inhibits the multipli-

cation of bacteria. The patient's toxæmia is diminished, his fever is reduced, pain is relieved and the absorption of inflammatory products is promoted. These changes are well seen in cases which have been doing badly with open drainage and where suction drainage is established. One or two irrigations daily with Dakin's solution are useful, for it is a powerful antiseptic and is a great help in separating the masses of coagulated lymph so often present and which may block the drainage tube.

The value of suction drainage in inducing prompt expansion of the lung is undoubted. The apparatus to be described was originally devised for a large left-sided empyema, following pneumonia, in a labourer, age 32. Drainage was efficient, but after three weeks' treatment the cavity showed no tendency to diminish in size and held about 1,500 c.c. Suction was then established and after one week the cavity held only 120 c.c. The apparatus was removed daily for irrigation without any disturbance to the patient. The apparatus is made after the Perthes model, but no attempt is made to cement it to the chest wall with adhesive plaster or collodion which makes it difficult to remove and soon irritates the patient's skin. Air gradually leaks in as the patient moves about, but the manometer shows the degree of vacuum present and several times daily more air is pumped out. It is portable so the patient is not confined to bed or room. It is made of material easily procurable and my plea for adding it to the large collection already in existence is its simplicity and its ease of application and removal as well as its usefulness.

The apparatus is applied after ordinary rib resection. The Bülow type of drainage has the disadvantage that the cavity cannot be explored and assurance obtained that all pockets of pus have been opened, and also that large masses of coagulated lymph may be present, and are not removed. These will block the drainage tube later. Rib resection is quite safe in the ordinary case, though with large collections of pus it is well to do a preliminary aspiration and thus avoid its sudden escape on the operating table, with danger of collapse to the patient. The lung is adherent to the chest wall at the margins of the empyema cavity and no further collapse of the lung occurs after evacuation. This condition does not apply to the very acute

cases such as were seen in the influenza epidemics where the streptococcus haemolyticus was present and where adhesions had not formed between lung and chest wall. Rib resection here was a very fatal procedure and closed drainage of the Bülow type was necessary. E. A. Graham has demonstrated that a patient having a normal vital lung capacity of 3700 c.c. will stand an opening in his chest wall, or combined openings, of eight square inches, but that when the vital capacity becomes as low as the tidal air, a very small opening may be fatal. Bartlett enunciates as an axiom that inspiration will always cause a lung to inflate rather than to collapse when the area of the opening in the chest wall is smaller than the interior of the larynx.

The drainage apparatus is made as follows: a drainage tube of firm rubber, about twelve inches in length, extends from the empyema cavity to a wash bottle of about one litre capacity, which is to collect the discharge. This tube is threaded through a tiny hole in a piece of pure rubber sheeting at least nine by twelve inches, which is to lie over the opening in the chest wall. To prevent the rubber sheeting from pinching the tube and also to make an air-tight union, a one-inch section of glass tubing is introduced into the drainage tube at the point where it penetrates the rubber sheet and the whole is bound together with linen thread (See diagram). Tapes are attached to each corner of the rubber sheeting to be tied around the patient's chest. The wash bottle is fitted with a rubber cork, having two perforations with short glass tubes inserted. The drainage tube is fitted over one glass tube and a second rubber tube extends from the second glass tube to a small vacuum pump, such as is used with Bier's cups. To prevent leakage through the pump, a three-way stop-cock is inserted into the tubing in front of the pump, or the tube may be clamped with an artery forceps. A manometer is made by lightly stretching a piece of rubber dental dam over the end of a small glass funnel. Strips of adhesive plaster wound around the funnel make an air-tight closure. This manometer is attached by a short rubber tube to the Y piece of a stethoscope. The outer rubber tube is cut across the centre and the Y piece joins the two divided ends. All joints must be air-tight.

The apparatus is applied as follows:—First, a thick coating of sterile zinc oxide ointment is applied to the skin around the chest opening, serving the double purpose of effecting a more air-tight closure and also protecting the skin. The drainage tube is fenestrated, is inserted into the cavity and the rubber sheet tied snugly and smoothly around the chest with the tapes. A large pad of lambswool or non-absorbent cotton is then placed over the rubber sheeting, the drainage tube perforating its centre. Absorbent cotton is less elastic and therefore not so good as a pad. The pad is held in place with adhesive and tape, as used for abdominal dressings and a binder is tightly applied over all, the drainage tube perforating the binder. This apparatus makes practically an air-tight

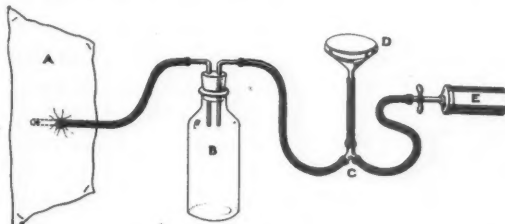


FIG. 1.—SUCTION APPARATUS

- A.—Rubber sheeting, with corners perforated for tapes. Drainage tube perforating its centre.
- B.—Wash bottle, 1 litre size, which collects discharge and in which a partial vacuum is produced.
- C.—Y piece to unite manometer.
- D.—Manometer.
- E.—Vacuum Pump.

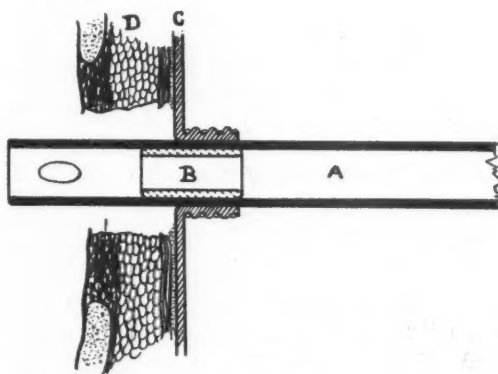


FIG. 2.—DETAIL OF CLOSURE OF CHEST OPENING

- A.—Drainage tube, showing fenestration at inner end.
- B.—Section of glass tubing, inserted in drainage tube and over which the rubber sheeting is tied with lined thread.
- C.—Section of rubber sheeting showing drainage tube perforating it.
- D.—Chest wall, with thick layer of zinc oxide ointment between it and rubber sheeting.

closure in the average case and is quite comfortable. In emaciated patients with depressed intercostal spaces I have used over the rubber sheeting in addition, an air cushion made of the largest size air-filled ring pessary, partially deflated. The rest of the apparatus is now attached and suction applied by pumping out a little air. When the patient is to get out of bed, a tape slings the wash bottle around his neck and the apparatus is then readily portable.

The amount of suction made is regulated by the sensations of the patient. Too much air causes him pain. Experiment shows a comfortable amount is equivalent to a two or two and a half foot elevation with the two bottle method of aspiration. On applying suction the dental dam of the indicator is drawn in and rises and falls with respiration. On left sided cases it also pulsates with the heart beat. It makes a splendid gauge. If air leaks in it becomes flat again and if the drainage tube becomes plugged with fibrin it does not move with respiration. I have found that both nurses and patient take a great interest in this indicator. Pumping is required several times daily because of slow leaks in the apparatus, and should fibrin block the drainage tubes it must be removed. The apparatus is removed daily if necessary for cleaning and irrigating the empyema cavity. No ill effects follow its removal. As the case proceeds it may be left in place for two or three days. The apparatus is continued in use until the cavity has disappeared and only a sinus remains, and when the lung has become adherent to the chest wall. It may be removed when no discharge of air is expelled from the sinus on coughing and forced expiration.

Report of Cases

Case 1.—Male, aged 32; labourer. Left sided empyema following pneumonia. Rib resection of eighth rib in posterior axillary line. After three weeks of open drainage the cavity still held 1,500 c.c. Suction drainage was then applied and after one week the cavity held 120 c.c. Suction kept up a free watery discharge so was abandoned and closure of the sinus followed the use of bismuth paste.

Case 2.—Female, aged 55. Had an osteomyelitis of sixth rib, following typhoid fever. A sinus had existed for one year. Empyema

followed rib excision—a mixed infection. The patient became very toxic with temperature 104° and delirium. There were no limiting adhesions to the fluid. Suction drainage was introduced into the pleural cavity through the incision used for rib excision. The patient immediately improved, with fall of temperature and disappearance of toxic symptoms and she made a good recovery. In this case the drainage opening was not well placed and her condition was such that open drainage would not have saved her life.

Case 3, male, aged 30. Of poor physique and a drug addict. Developed empyema following pneumonia of right lower lobe. Thoracentesis was done in posterior axillary line and 450 c.c. thin pus removed. Culture showed pneumococci and streptococci. The next day 900 c.c. pus were removed and the following day rib resection was performed, a portion of the eighth rib being removed in the posterior axillary line. Open drainage was used and in two days irrigations were commenced with Dakin's solution at two hourly intervals. Large masses of coagulated lymph were removed, but progress was not satisfactory from time of operation. The temperature rose daily to 101° and there was considerable cough and pain. After six days of this suction drainage was commenced, with immediate improvement. The temperature at once dropped and in a few days was normal, while the pain and cough vanished. The discharge changed to a profuse sero-pus. In two weeks the cavity had diminished to a sinus, with free watery discharge. This did not close until injected with 10 per cent. bismuth paste. As this cavity diminished in size the opening became valvular, but without any interference with good drainage.

Conclusions

- 1.—Suction drainage will produce prompt expansion of the lung when commenced early.
- 2.—The hyperaemia produced by suction is a valuable aid in combating the infection present.
- 3.—Suction drainage is efficient when used in cases having a poorly placed or valvular opening.
- 4.—It cannot be used in cases where a bronchial communication exists.

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CONCERNING THE DEFINITION AND CLASSIFICATION OF ANAEMIAS*

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THE term "anaemia" is one of those apparently concise and readily understood expressions, of which there are many in pathology, which on careful analysis quite strongly resist definition. For example, the word "inflammation" brings a comparatively clear cut conception to the mind, which is passed by readily as an established entity; and yet in defining it, one is plunged into such a complexity of details that the definition becomes rather a dissertation of the facts.

The old definition of anaemia as the symptomatic expression of blood poverty is hardly satisfactory. We should have to include under such a statement several alterations of the blood which do not fall within its limits. Among these are reduction in certain chemical constituents of the serum as albumin, diminution in the number of white blood cells or leucopenia, diminution in the number of platelets or thrombopenia, and even diminution in the whole blood volume or oligaemia. The last is rarely if ever more than temporary. All these must not be included in a definition of anaemia.

The two factors which are directly concerned in anaemia are the red blood cells and the haemoglobin. If these are diminished we refer to it as erythropenia and oligochromaemia respectively. But even these terms are not synonymous with the word "anaemia," rather they are merely symptomatic expressions of the

anaemic state. They are merely the clinical outward signs of its presence. Anaemia in the true sense lies deeper and involves the red cell forming organ, that is, the bone-marrow or myeloid tissue, and consists of an upset of the relation between the blood demand for the red cells and the bone-marrow supply. It is therefore a functional myelopathy.

This relation of the blood demand to bone marrow supply can be expressed by the equation:— $\frac{\text{blood demand}}{\text{myeloid function}}$ which in health equals 1. If the numerator, that is blood demand, is increased without a corresponding increase of the denominator, that is myeloid function, the balance is upset and anaemia results. Therefore, we may define anaemia as a temporary acute or chronic progressive, relative insufficiency of the erythropoietic myeloid function in the presence of normal or pathologically over-normal blood forming demand.

Our knowledge as to the exact mechanism whereby blood demand is converted into a potent stimulus capable of arousing proliferative erythropoietic activity is negligible. There comes to our rescue no intermediate nervous centre as in respiration nor any special organ with endocrine control as in carbohydrate metabolism, although there is considerable evidence to show that a certain harmonious interrelation exists between the endocrine glands and the bone-marrow. In the present state of our knowledge, therefore, we may best

*Read before the Osler Reporting Society, Montreal.

assume that the actual blood deficiency directly constitutes the stimulus which is felt by slumbering indifferent cells capable of erythropoietic activity.

To how great an extent this blood demand may stimulate blood formation is shown in the rapidly growing embryo. At first there arise from the primitive vessel anlage nucleated elements which are achromatic, but later acquire haemoglobin. Up to the fifth week the blood sinuses and capillaries all over the body share in this erythropoietic activity, but then it becomes specialized in certain organs and the liver at this time plays an important rôle. Here the red cells form about the walls or in the out-pouchings of the intra-acinar capillaries, never in the liver tissue itself or outside the capillary walls. In embryos of 9 cm. length the anlage of the spleen is laid down, and at 15 cm. small erythropoietic areas appear and the spleen becomes a blood forming organ. This activity for a time gradually increases, later wanes and at birth has practically disappeared. In the third month the anlage of the bone-marrow appears and throughout the second half of intra-uterine life plays a considerable, ever-increasing rôle in the building of the red cells. There, as later in post-natal life, they arise from indifferent mesenchymal cells, approximate to the blood vessels or possibly, and to my mind more likely, as more in agreement with the earliest formation, intravascularly, in endothelial bays temporarily out of the path of the blood current.

Coincidentally with these morphological changes in development, occur changes in the blood itself. At first it is megaloblastic in character, that is, made up of large cells with considerable cytoplasm, which is rich in haemoglobin, and a characteristic nucleus. This is referred to as the *early embryonic* type of blood formation. Later it becomes macroblastic and some of the cells lose their nuclei and simulate, though larger, the erythrocytes of post-natal life. Such cells are termed macrocytes and this type of formation is referred to as *late embryonic*. At the time of birth the non-nucleated erythrocytes predominate by far over the nucleated forms in the blood, though there is still present the reflection of an embryonic character.

Thus there occurs throughout ontogenetic development a continuous haemopoietic meta-

morphosis as a result of the rapidly increasing blood demand. Moreover this continuous reorganization of the system in no way ceases at birth, but there is present even then throughout post-natal life, though to a less degree, a considerable fluidity of the haematopoietic tissues which results in marked changes during the various age periods. Throughout the years of growth the demand remains quite large, but gradually decreases as adult life is reached. Coincidentally, the formerly active marrow of the long bones is replaced by fat, and the marrow of the ribs, vertebrae, skull, etc., which remain proliferative, settle down to more or less stable equilibrium, stimulated merely by the demand set up by the everyday wear and tear destruction. Occasionally, however, quite inexplicable wave-like exacerbations of proliferative activity occur in the long bones and they again assume a distinctly erythropoietic character. Thus, quietly, equilibrium is maintained until because of some sudden excessive demand or injury to their activity the balance is upset and anaemia results. This leads us directly to the subject of classification.

The problem of classifying the anaemias offers considerable difficulty, for we are dealing, not with an entity in any case, not with a separate disease, but with a symptom of many diseases. The question has been approached from different angles which we might term etiological, histological, clinical and pathogenetic.

The etiological classification has to do solely with the primary cause of the anaemia. Unfortunately in many cases this is not known and consequently, until it is learned, the anaemia must remain unclassified or be referred to as idiopathic or cryptogenetic. Moreover it takes no cognizance of the great variations in the blood pictures as shown by smears. These factors, however, are the basis of the histological classification; but here again we are confronted with difficulties. Anaemias of very different etiology show identical blood pictures. For example the secondary anaemia caused by the toxins from the fish-worm *bothriocephalus latus*, shows the same characteristic reversion to the early embryonic type of erythropoiesis which we find in the relatively common, so-called primary pernicious anaemia. Neither the etiological nor histological classification therefore satisfies.

The time-honoured clinical division into primary and secondary anaemias is acceptable only in a very limited sense. There are no primary anaemias, for as such we must have a primary, idiopathic, functional disturbance of red cell formation arising by itself within the erythropoietic tissue. Such an anaemia has not been recognized. We can rightly use the term primary only as referring to an anaemia arising from disease within the bone-marrow as leukaemias, in contrast to secondary anaemias which arise from disease elsewhere in the body. But this is not the clinical interpretation usually employed.

When, however, the subject of classification is approached from the angle of pathogenesis, one can recognize distinct varieties of anaemia. True, all are functional insufficiencies of the blood forming tissues, but this may be brought about in different ways. We may distinguish whether this is due primarily to an increased erythrocyte loss or destruction from the circulating blood, or whether it results from a direct interference with red cell formation. In the former case we may speak of the anaemia as *haemopathic*, in the latter as *myelopathic*. These constitute the two main divisions of the anaemias.

Outline of the Classification of the Anaemias

A.—*Haemopathic* (blood)

1. *Haemorrhagic* (loss of blood)
2. *Haemotoxic* (destruction of blood)
 - (a) endogenous (x) erytholytic
 - (b) exogenous (y) erythrorrhagic

B.—*Myelopathic* (bone-marrow)

1. *Haemomyelotoxic* (blood and bone-marrow)
 - (a) aplastic
 - (b) erythroplastic (hypochromic)
 - (c) erythrohyperplastic (hyperchromic)
2. *Myelotoxic* (wasting away)
3. *Dyscrasia*
 - (dysharmonie, dysformative, dystrophic)

A haemopathic anaemia is, therefore, an anaemia in which the disturbance is primarily in the circulating blood, and in which the bone-marrow suffers merely from an excessive demand which is out of proportion to its capability of immediate response. Of these haemopathic anaemias we recognize two groups. First, and simpler, those which are termed *haemorrhagic* and are due to a loss of blood from the circulation. Secondly, those which are termed *haemotoxic* and are due to a toxic destruction of the red blood cells within the

body. The former, or haemorrhagic anaemias, develop whenever acute, excessive, or chronic but persistent bleeding occurs. Such are the anaemias of gastric ulcers, purpura, metrorrhagia, etc. Here the bone-marrow escapes injury but is subject to an excessive demand. The normal continuous, what we may call erythroplastic activity, is not sufficient to cope with the loss, and a supernormal, temporary erythroregenerative activity, which is, however, of physiological character, is added. In such cases the blood picture shows little change in the type of cells, except that if severe, a too hasty regeneration is evidenced by immature forms, reticulated reds, polychromatophilia, and even normoblasts.

In contrast to this haemorrhagic group of haemopathic anaemias stands the haemotoxic group. Here the loss is not dependent upon bleeding but rather upon a persistent toxic injury and destruction of the blood cells. Obviously, these toxins may be endogenous or exogenous; and also we recognize two different manners in which they attack the red cells; one by a dissolution and hence termed erytholytic, the other by disruption, and hence erythrorrhagic. In purely haemotoxic anaemias the bone-marrow escapes and, as in the haemorrhagic group, is merely unable to meet the excessive and persistent demand. Such anaemias occur particularly in the presence of certain chemical poisons.

In contrast to these haemopathic anaemias which find their origin in a loss or destruction of the red blood cells, we have the myelopathic group. By a myelopathic anaemia we understand an anaemia in which there occurs an injury, destruction, alteration or perversion of the bone-marrow activity itself. It is not merely an inability to meet excessive demand, but the activity of the erythropoietic tissue itself is perverted. Such alteration of the normal erythropoiesis may be brought about in several ways which act as subdivisions of this myelopathic group.

The first of these and most common form we term *myelotoxic*, or because the circulating blood cells are likewise involved, *haemomyelotoxic*. Here a circulating toxin affects the blood and bone-marrow cells. If the cause of the toxin is known we speak of it as phanero-genetic, if unknown, idiopathic or cryptogenetic.

Naturally toxins vary greatly in their intensity and the specific nature of their activity. This can not be measured directly, but we can recognize marked differences in their effect on the bone-marrow by the character of the bone-marrow response as expressed in the blood. Thus we recognize an *aplastic*, an *erythroplastic* and an *erythrohyperplastic* group. In the first of these there is a characteristic lack of any new red cell formation; even the normal physiological production is wiped out and the patient's red cell count drops progressively without any evidence of regeneration. In the second or erythroplastic group there is a variable amount of regenerative response. In some cases the marrow appears in a state of torpor, drugged by the toxin and unaware of the excessive demand; in others even the fatty marrow of the long bones becomes studded with larger and smaller islands of active myeloid parenchyma. Such anaemias consequently show considerable variation in their blood pictures. If the response is slight, as in many chronic toxic states, for example, nephritis, tuberculosis, etc., the red cells are small, and stain poorly, immature forms are scarce, and the color index is low. This type is therefore hypochromic. In others, however, where the response is more active, embryonic forms as macrocytes and macroblasts appear in the blood, the color index is higher, even slightly above 1, and there is a distinct reversion to the late embryonic type of erythropoiesis. Such anaemias, therefore, border on the following hyperchromic group, though they never show the characteristic blood cells of the early embryonic type.

Thirdly, there is the erythrohyperplastic group, characterized by enormous erythroregenerative activity. It would seem that the toxin is so mild as to be rather an irritant and stimulus to new red cell formation than a hindrance. The bone-marrow becomes brick red and often erythrogenesis is taken up by the spleen and liver. So real is the response that reversion to the early embryonic type of erythropoiesis results. Megalocytes and megaloblasts, with their more immature root cells appear in the circulating blood; the color index is high, though total cell volume may be considerably reduced. Such a condition may be termed,

therefore, hyperchromic. We find this type of anaemia in certain cases of lues, sometimes associated with pregnancy, in the intoxication resulting from the fish tape-worm, *bothriophthalmus latus*, and also from the hook-worm, *ankylostoma duodenale*, and especially in pernicious anaemia. The last, therefore, is merely an idiopathic member of the group of hyperchromic, haemomyelotoxic anaemias.

The second member of the myelopathic group of anaemias we term *myelophthisic*. Here the functional insufficiency is due to a wasting away of the bone-marrow, rather than to any toxic interference. Under this head come the anaemias resulting from the replacement of the marrow by tumours, leukaemias, etc., and also the anaemia of old age. The blood picture here varies. It may be aplastic, but often there is considerable erythroregeneration. It is doubtful whether starvation or lack of sunlight *per se* will cause anaemia.

Finally, we must recognize a third member of the myelopathic group which we term *dyscrasic*. By this is meant that the normal balance or harmony between the bone-marrow and other, particularly endocrine organs is disturbed. This interrelation between the organs is little understood, but nevertheless quite obviously exists. Some of the members of this group are in a sense more deeply rooted, more fundamental in the character of their disturbance than those of the preceding groups. They have to do with alterations and deficiencies in the building and structure of the cells, and are hence dysformative in nature. Among them we include chlorosis, in which certain disturbances of the sex gland at the time of puberty together with altered iron metabolism play a rôle; the anaemia of haemolytic icterus, in which an inheritable, constitutional alteration of the structure of the erythrocytes allows, in the presence of other factors, too rapid destruction by the spleen; and the anaemias associated with certain endocrine disturbances as Addison's disease, hypothyroidism, myxoedema, etc. This completes the myelopathic anaemias.

In closing it need hardly be mentioned that sharp demarcations between the various, particularly myelotoxic anaemias do not exist. Many are combinations of different groups.

Furthermore, the response of the bone-marrow during different age periods cannot possibly be the same, since its morphological structure is so different. Any classification is therefore far from satisfactory. However, to my mind, the arrangement outlined above forms a working basis from which much benefit may be de-

rived. It allows us to express in a few words our conception of the mode of development of any particular anaemic state. It emphasizes the close relationship between various anaemias, and thirdly it impresses upon us the fact that we are dealing at all times with a functional insufficiency arising in the course of disease.

PYELITIS IN CHILDREN*

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PYELITIS, as a clinical entity, was first described by Holt¹ in 1894. Since that time considerable experimental work has been done with a view to ascertaining the modes of infection, but as cases of pyelitis usually recover, little opportunity for autopsy investigations arises. It therefore seemed worth while to place on record the autopsy findings in a private case.

History of Case.

Baby A., female, age 4 months. She was first seen by me on September 14th, 1922.

Complaint: Frequent stools. Failure to gain in weight. Temperature.

Family History: Father and mother living and well. No history of syphilis, asthma, eczema or hay fever in the family. Children living, one. One miscarriage at five months.

Feeding History: Patient was nursed for three months and did well. Mother became ill and as a result the baby was weaned. She was then put on a mixture of cow's milk, lime water and milk sugar, proportions not definitely known. She vomited this feeding. Then Nestle's food was tried, following the directions on the box. After one week on this food diarrhoea developed; as many as ten stools in 24 hours, eventually with blood in them. Then barley water and skimmed milk was ordered, without improvement, and finally protein milk, but the stools still remained frequent. Three days before being seen by me, the patient's temperature was 103°F. and had remained with slight remissions at that point.

Physical Examination. **Weight:** 9 lbs. 12 oz. Poorly nourished female child, with rather a marked pallor. **General condition:** poor. Head symmetrical, anterior fontanelle 1 inch by 1 inch, somewhat depressed. No craniotabes. **Skin:** Tissue turgor poor. **Temperature:** 103.5°F. Physical examination otherwise negative.

Case was referred at once to the Children's Hospital with a tentative diagnosis of pyelitis, with acute gastroenteritis.

Course in Hospital: Admitted September 14th, 1922. Temperature 104°F. Physical findings as above noted.

Urinalysis: September 14th, 1922, urine acid; albumen marked trace; pus cells large number otherwise negative.

Blood Count: White blood cells number 17,200; polymorphonuclears 38; small lymphocytes 40; large mononuclears 18; transitionals 1; eosophils 2; basophils 1; Von Pirquet, negative.

In 24 hours the urine was alkalized by means of potassium citrate and hypodermoclysis 150 c.c. 3% dextrose was given daily. The temperature remained persistently between 102°F. and 103°F. The stools were 5 to 8 a day in spite of the fact that breast milk was quickly made available for the patient.

The urinalysis daily showed pus varying in amount from a few cells to a large number.

It is regretted that no culture was made of urine.

The patient died on the seventh day after admission. The temperature immediately before death reached 105.5°F.

Autopsy six hours after death by Dr. William Boyd, Professor of Pathology, University of Manitoba.

Autopsy findings. Examination: Body that of a poorly nourished child, tissues of which show general oedema. **Chest:** subcutaneous fat much atrophied. **Heart:** muscles and valves perfectly healthy. **Lungs:** extremely pale but otherwise normal. **Liver:** appears larger than normal; surface is smooth and very pale. On section structure of lobules is completely lost and all that can be seen is the uniform pale appearance. **Gall Bladder:** distended, thin walled and contains a thin fluid almost as clear as water. **Spleen:** normal in size and consistence, but extremely congested and dark. **Stomach:** shows marked dilatation which stops abruptly at pylorus. **Kidneys:** both kidneys appeared normal externally. When incised a small amount of muco-purulent material was observed in the pelvis but the cortex and medulla appeared normal. The pelvis was congested on both sides. Smears made from pelvis showed numerous pus cells. **Bladder:** showed a good deal of congestion but no erosion.

Histological examination. Left Kidney: The cortex showed marked histological changes in the convoluted tubules. Many of the tubules showed cloudy swelling, the cytoplasm being very granular and the cells projecting into the lumen of the tubules. In others the degeneration has proceeded further, the cells being almost completely disintegrated or containing vacuoles, and the nuclei either showing pyknosis or having completely disappeared. The glomeruli appeared to be shrunken so that a space is left between the glomerular tuft and

*Read before the annual meeting of the Manitoba Medical Association, Brandon, October, 1923.

Bowman's capsule. This space in no case contained any exudate. There was no congestion of the vessels of the cortex, nor was there any inflammatory exudate between the tubules.

The *medulla* showed a quite different appearance, the vessels were considerably congested, but the tubules showed very little change apart from slight cloudy swelling. There was no inflammatory exudate in the interstitial tissue even at the tip of the pyramids.

Right Kidney: The changes are exactly the same as those of the left side, except that the degenerative changes in the convoluted tubules in the cortex are more marked. There is no difference in the medullary condition.

Bladder: The mucous membrane is intact and the muscular wall is of normal appearance. There is nowhere any evidence of inflammation.

Bacteriological examination: When the kidneys were removed from the body each one was seared with a hot iron and the cultures and smears were made from the pelvis. In the smears pus cells were found, more numerous on the right side than on the left.

A pure culture of bacillus coli was obtained from each kidney.

Helmholtz² states the same set of symptoms may be associated with cortical abscess of the kidney, with infection of the pelvis, ureter or bladder, singly or combined. In spite of the severe clinical course there are at best, only a few postmortem examinations in which the pelvis alone is found to be involved. The post-mortem findings in this case would add one more case in which the pelvis of the kidney was alone involved.

Incidence: It is generally estimated by various investigators that the incidence of pyelitis is about 1% of all cases coming under treatment.

Etiology: Gettings³ states that we may consider pyelitis as occurring in two forms (1) the so-called primary form; (2) the secondary form which occurs as a complication of other diseases. In both forms the existing cause is bacterial. Bacillus coli, streptococci, staphylococcus, pneumococcus, bacillus lactis, aerogenes, etc.

There are various theories as to the manner in which the bacteria reach the kidney, and in a paper such as this, I will content myself with enumerating them, viz:—(1) ascending infection through the ureter; (2) lymphogenous transmission directly through the bowel, and (3) haematogenous infection.

Symptoms: Cases of pyelitis usually begin abruptly with a high fever in an otherwise healthy female infant and the majority are confined to this, i.e., in Still's⁴ 28 cases under one year, 3 occurred in boys, and amongst

14 older children there were no boys. In 15 cases, ages running from 10 days to 9 years in my own practice, all have occurred in girls. I have only been privileged to see 2 cases in boys, one a boy of 9 months who recovered at the Babies' Hospital, New York, and a second one on public service in Children's Hospital, who died, and autopsy showed cortical abscess of the kidney.

The infant may shake, or as Thompson⁵ expresses it, may have rigors, or even, at the onset, definite convulsions. Vomiting is sometimes intense, as are also acute enteric symptoms. So frequently is diarrhoea encountered that some authors regard pyelitis as secondary to alimentary disturbances. This does not seem reasonable, for one has only to consider the great number of gastro-intestinal upsets which occur during the summer season without the added complication of pyelitis. In the great majority of cases, the chief symptom is temperature, for which, after a careful physical examination no cause is found.

Diagnosis: The diagnosis rests entirely on a urinary examination, and the physical examination of an infant, more especially a female infant, is not complete without a urinalysis. It is necessary to point out that a urinalysis is essential repeatedly in all cases of acute infections, in order to exclude the possibility of a pyelitis continuing the persistence of temperature. There is one precaution to be taken: the urinary meatus in male sexes and the vaginal orifices in girls must be free from any sign of inflammation or discharge.

Still⁴ places the number of cells necessary to make a diagnosis as six to high power field, this without centrifuging the urine. It may be necessary to make 3 or 4 examinations before pus is found. The pus always occurs in an acid urine and catheter specimens in the great majority of cases show bacillus coli. One of the reasons that the diagnosis is most often missed is the difficulty in securing urine from a female baby. It should not be obtained by having it collected in a piece of absorbent cotton for in this manner the corpuscles may be lost. Gettings³ describes the method which obtains in the Children's Hospital, Philadelphia, for obtaining urine. Through a piece of adhesive plaster approximately 3 inches square, two

medium slits are made, at right angles, just large enough to admit the flange of an ordinary 2 to 3 ounce bottle, passing the latter through from the "back" of the plaster to the adhesive side. Each corner of the plaster is slit up $1\frac{1}{2}$ inches to 2 inches to provide for tight apposition. The plaster can be made to fit the bottle tightly by wrapping an extra piece around the neck and it is then applied over the vulva so that the mouth of the bottle lies just at the urinary meatus. By carefully fitting the lower end of the plaster in front of the anus it is possible to avoid faecal contamination. For the past year this method has been in vogue for collecting samples of urine at the Children's Hospital and I have yet to hear of a failure to secure urine in the first twelve hours after admission.

Treatment in Acute Cases.

Apart from the removal of possible foci of infection the greatest importance in treatment of pyelitis attaches to securing free drainage by supplying large amounts of water. Twenty ounces should be given to infants daily in addition to other fluids, with larger amounts to older children. In this connection the addition of saccharin grains $\frac{1}{2}$ to a pint of water is often of service. If the water is refused or vomited it may be given by nasal tube or by hypodermoclysis or intraperitoneally.

The next measure is to secure complete alkalization of the urine, by means of potassium citrate. It is necessary to point out that large doses are required, and as much as 125 grains per day, continued over a period of days, may be necessary to secure the desired result. It is admissible to give the parent some red litmus paper with instructions to test the urine daily to see that alkalization is maintained. Usually there is definite improvement in the toxic symptoms in 48 hours or at most 4 days. In my own cases I keep the urine alkaline until it is clear of pus and then for 6 weeks longer, and advise urinalysis once a month for at least six months longer to detect any possibility of recurrence.

If no improvement results with alkalization, most authors recommend urotropin. Before instituting urotropin treatment it is necessary to allow the urine to become acid.

The basic doses to an infant 5 or 6 months is 15 grains in 24 hours. This treatment is continued for 5 or 6 days and then another course of alkaline is given.

Treatment in Chronic Cases.

In chronic cases autogenous vaccines have been used, with doubtful success.

Kretschmer⁶ and Helmholtz describe their technique of pelvic lavage, with silver salt solution, by means of ureteral catheterization. Their conclusions are as follows:—1. Pelvic lavage with solutions of silver nitrate is a procedure that can be carried out in infancy and childhood. 2. This mode of treatment has rendered the urine sterile and free from pus in 9 out of 11 cases in their series. Their cases ranged in ages from 7 months to $10\frac{1}{2}$ years. 3. There have been no complications or unfavourable results with this method of treatment. All cases treated this way had resisted all other forms of treatment. I have had one such case in a child of nearly 8 years treated in this manner by Dr. Donald McIntyre, attending surgeon, Children's Hospital, Winnipeg. She has remained well now with the urine free from pus for nearly one year, whereas she had been having recurrent attacks on an average of once in 2 months for 2 years previously. Cowie⁷ recommends in refractory cases the use of horse serum 5 c.c. subcutaneously and repeated if necessary. He claims that improvement is generally marked immediately following the serum rash.

If the rash does not appear at the end of 9 to 10 days he repeats the treatment and may repeat again in 4 or 5 days. He thinks the result is due to the action of a foreign protein, the nature of the reaction he does not attempt to explain.

In three cases I have given whole blood, from the father, 10 c.c. subcutaneously, with apparently good result in two cases and no result in one case.

The treatment as recommended by Poulsen⁸ is as follows: "Twice a week the patient's bladder is washed out with a solution of silver nitrate, 2% for girls, and owing to pain, 1% for boys. The treatment is continued until the urine is sterile, on two examinations at an interval of 3 or 4 days, i.e., shows no growth on

agar or broth after incubation for 48 hours." I have no experience with this method of treatment.

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MY EXPERIENCE WITH THE CAESARIAN OPERATION

H. H. McNALLY

Fredericton, N.B.

THE general practitioner is timid of the Caesarean operation. Public sentiment is against moving the woman after labour has commenced. Routh says "that in women operated on prior to labour or early in labour and before any examinations have been made by practitioner or midwife the maternal death-rate is from two or three per cent., while in women operated upon when advanced in labour and after many examinations, and especially after attempts at delivery, the maternal mortality is twenty to thirty per cent."

Professor J. M. Monroe-Kerr of Glasgow says his results correspond. For these reasons I venture to forward a series of fifteen cases all of which I have done under various conditions at the Victoria Public Hospital, Fredericton, and drawn from a community uneducated in the Caesarean operation idea, consequently involving more delay before permission was obtained. In each case there was no preliminary vaginal preparation. In each case where there was much manipulation or attempt at delivery abdominal drainage was placed, sometimes a drain on each side of the uterus from the pelvis. In no case did I make any attempt to open the internal os more than nature had done. In no case was there irrigation of the uterine cavity. In every case a hot saline pack was introduced into the uterus to be removed before completely closing. In every case one c.c. pituitrin was given about the time the child was delivered; in no case was there any effort made to disturb the uterus in its resting place more

than to open, extract and close. In every case the abdominal cavity was protected by packs, and in no case was the abdominal incision made to extend above the uterine body.

CASE 1.—The first Caesarean case in the community: Mrs. L. C., a short fat primipara, who was in labour when I was called. All night was spent at the bed-side and repeated attempts were made to deliver with forceps; patient was removed in the morning through the town to Victoria Public Hospital; Caesarean section at 9 a.m. Mother made a perfect recovery, child lost.

CASES 2 AND 3.—Mrs. S. L., in her thirties, a primipara at full term. In labour when I was called; all day passed and the night without delivery. It was the next afternoon, after strenuous attempts at delivery she was removed through the town to the Victoria Public Hospital—a Caesarean operation saved the mother, the child was lost. This woman called me when again in labour with her second child, but would not submit to Caesarean operation until an attempt was made to deliver. Again she was removed from her home to the hospital—a Caesarean operation saved mother and child.

CASE 4.—Mrs. B. B. I delivered this woman of her first child by version after an unsuccessful attempt at high forcep delivery resulting in a complete rupture of the perineum; the child lived. At her second confinement she refused operation. By version I delivered the child which was much smaller than the first child; it was stillborn. In the third pregnancy she delayed until labour was well on and repeated examinations made before taking her to the hospital. Caesarean section saved mother and child; both left hospital in two weeks.

CASE 5.—Mrs. T. V., a primipara in her thirties, living twelve miles from Victoria Public Hospital; in labour at full term when I was called; the progress was so slow that I left her, responding to a call two days later and finding dilatation as complete as possible with a contracted inlet; made strenuous attempt to deliver. Surrounding her with hot bottles to protect her against a night air much below zero, she was removed to the hospital over the snowy road and a Caesarean section saved mother and child.

CASE 6.—Mrs. C., living fifty miles from the city. Her physician early in the morning found his patient in labour, arriving with her at the hospital in the early part of the following night, having brought her by automobile and not on a stretcher. Physical examin-

ation found a complete laceration of the perineum with much bruised appearance. The uterus had within it the head only of a full term child. Her physician said that after much effort by version, he had gotten the child to daylight but could not deliver the head, so amputated it. A Caesarean saved the mother.

CASE 7.—Mrs. F. M., a primipara, living six miles out of town, who was in labour at full term when I was called. After much time spent and patient waiting and strenuous attempts to deliver, she was removed in the night to the hospital. A Caesarean saved mother and child. At another pregnancy I made an attempt to deliver this woman at seven and one half months after many days of natural labour. I crushed the head; the child died in two weeks.

CASE 8.—A primipara three weeks short of full term, living twenty miles from the hospital. In eclampsia her physician had made an examination before I reached her to make my vaginal examination. She had many severe convulsions which continued even after the administration of morphia. In this condition she was transported to the Victoria Hospital, having a severe convulsion on the way to the operating room. A Caesarean saved mother and child.

CASE 9.—Mrs. V. L., a thyroïd patient who had given birth to her first and only child eleven years previously under much difficulty. Her pre-natal period with this second pregnancy was most troublesome. At the time expected as full labour had begun, nurse and physician were called; examinations were made and the case followed through the day when labour pains ceased. She lived in distress until another month had passed; when I saw her she was a hopeless sight, so flabby that the child seemed to be hanging in the skin over the pubes. She was removed a distance of two miles to the Victoria Hospital; Caesarean section saved both mother and child.

CASE 10.—Mrs. F. M. N. had been confined three times previously. Twice she had nearly died as she had been seriously ill after each delivery. At the third pregnancy the child died in the delivery. When I saw her she was in labour at full time with her fourth pregnancy. After examination I had her removed from her home to the hospital. A Caesarean section saved both mother and child.

CASE 11.—Mrs. L. C., a young woman who had given birth to two children suffered in the beginning of her third pregnancy with pernicious vomiting and obstinate constipation; after worrying on until seven months had passed, a complete obstruction of the alimentary tract occurred. A vaginal examination showed a relaxed uterus with a partly dilated os. When on operating table black vomitus came from her nostrils; she was very difficult to anaesthetize. Laparotomy. Caesarean to expose adhesions about caecum and appendix; there was

also an adhesion of the bowel to broad ligament in left side; both mother and child are still living after two years.

CASE 12.—Mrs. R. P., a primipara at full term who had a Neisser infection not long before pregnancy occurred, suffered much all the time through her pregnancy with a vaginal discharge. I found the patient with a temperature of 104 degrees F.; a tender abdomen, and suffering much pain but not as labour pain. The district nurse with her said she had given morphia as directed by her physician and that her temperature the previous day was 104 degrees and that she had been given morphia also the day previous. A vaginal examination found the os as fully dilated as it could be with a contracted inlet. There was a breech presentation, many hours were spent in waiting and observation and strenuous effort to deliver. It was impossible to even bring down a foot. She was removed to the hospital where a Caesarean section saved both mother and child. Baby's eyes showed signs of infection by the second day even though silver solution was dropped in at time of delivery. Baby also developed Neisser infection in the vulva, made no doubt more susceptible by an abrasion. The mother developed septic phlebitis after the abdominal wound had practically closed. A good result was apparent after the employment of sero-bacterin, Neisser.

CASE 13.—Mrs. D. D. was a woman in the forties, who had lost owing to difficulty in labour, her first and only child about two years previous to this. During the three weeks previous to her removal to the hospital labour apparently set in several times; at each time examinations were made. Finally she was removed to the Victoria Hospital where a Caesarean section saved both mother and child.

CASE 14.—Mrs. W. L., a primipara in labour when admitted to the Maternity Hospital. After patiently watching and an unsuccessful attempt at delivery with forceps, Caesarean section saved the mother; the child was born alive but died the following day. It was a weakling.

CASE 15.—This is a case which I feel ought not to be mentioned with the above. It was nearing the full term of pregnancy when I saw her in consultation, a long distance away; her urine was almost a solid block when boiled, the kidneys secreting but little; she was in eclampsia; an unsuccessful attempt was made to produce labour and delivery and she was pronounced hopeless; her distracted husband insisted on getting a special train to bring her to the city for Caesarean operation. She died the next day after the operation never having regained consciousness; the baby was dead when removed from uterus.

The Treatment of Urethral Stricture by Excision.—The history of urethral stricture as it is recorded in medical literature is reviewed by Granville MacGowan, Los Angeles, and the technique of its repair is discussed in detail. In the author's operation, the intention is to restore the tube by approximating its cut ends in their entire circumference, and this, he says, is best achieved not by the laying of a circular stitch, such as was done by Mayo Robson with

success after the excision of an annular stricture where the loss of structure was not more than $\frac{1}{4}$ inch, and as was the practice of König, but by slitting the urethra and spongy body both anteriorly and posteriorly into three strips, or ribbands, one posterior and two lateral, using great care not to mangle the tissues and to have clean incisions. MacGowan reports no failures from the use of this method. —*Jour. Am. Med. Ass.*, Dec. 1, 1923.

PRACTICAL APPLICATION OF INSULIN IN DIABETES

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THREE months ago the Department of Public Health began the free distribution of insulin to needy diabetics of the Province of Ontario. This very practical charity has aroused wide-spread interest. It is proving a measure of great benefit to humanity. The common sense of such a step is so apparent that other provinces are taking similar action.

In spite of such measures, insulin has not been used as much as it might have been. Physicians tell us they are not mathematicians. So much of a technical nature has been written that the practitioner is confused. It is my intention to set forth in purely practical fashion the basic principles underlying our present day conception of diabetes.

True diabetes is a disease in which there is a profound disturbance of metabolism. It is manifested by the classical symptoms—glycosuria with an accompanying polyuria, polydipsia and polyphagia, with, in advanced cases, wasting. This disturbance does not restrict itself to the metabolism of carbohydrate, though this may be considered to be involved primarily. Following the ingestion of food, the end products of digestion find their way into the blood stream—the starches and sugars producing glucose, the meats and eggs producing amino acids, and fat the fatty acids. Glucose is immediately utilizable as fuel, or may be stored in the liver as glycogen. Amino acids replace tissue wastage. Amino acid in excess of body requirement is relieved of its nitrogen, which is excreted in the urine, and the part remaining in the body is handled as glucose or fatty acid. Fatty acid is used as fuel or stored as fat. But to be utilized as fuel it requires, at the time of its being burned some combustion of glucose. It has been estimated that the oxidation or burning of one gram of glucose will allow the complete combustion of from one to three grams of fat. If sufficient glucose is not burned, the products of the incomplete burning of fats appear as diacetic acid or acetone.

The pancreas contains two types of gland cells. The islet cells have been found to produce insulin, and insulin in some way controls the storage or burning of glucose. The normal production of insulin by the islet cells of the pancreas is thus a determining factor in the above process. An individual produces naturally sufficient insulin for normal requirements. A diabetic does not produce sufficient natural insulin, and a wastage of valuable food occurs, which is excreted as glucose. This quantity may be estimated and so too may the glucose in the diet. From a consideration of these two amounts one may determine, to a degree, the ability of the diabetic to utilize sugar.

The therapeutic use of insulin is simply the making up of a natural deficiency. In a moderately severe diabetic, one unit of insulin, the unit being an arbitrary one, will enable the body to burn an amount of glucose equal to approximately one and a half grams of excreted glucose with a disappearance of a corresponding quantity of sugar from the urine. Or, one unit will enable the burning of from two to three grams of total glucose in subsequent increases of diet to be later considered. It has been previously pointed out that in order to obtain the complete burning of the end products of fat, a fairly definite amount of glucose must be consumed—one gram of glucose to from one to two grams of fat. All carbohydrate ingested may be burned as glucose. Fifty-eight per cent. of protein and ten per cent. of fat ingested may be burned as glucose.

Should an excess of fat be given over the amount possible for the available glucose to oxidize, or burn up, products of incomplete combustion of fat appear in the blood and urine. These are the ketone bodies, the acetone and diacetic acid, abundant in the blood and urine in the pre-comatose and comatose state of the diabetic. The readiness with which vital processes adapt themselves allows reasonable latitude in the practical application of the above principle.

Diets vary, depending on individual or national custom. Yet diets of widely different constituents may be equally satisfactory. Two individuals eating similar foods may dispose of it in widely different ways. Certain fundamentals, however, remain. The number of heat units required by an individual resting must be known and can be most accurately estimated by the Du Bois height weight scale and Aub Du Bois table of requirements, which indicate that adults of proportionate weight and height require approximately twenty-five calories or heat units per kilogram, (2.2 pounds) of body weight. At rest an adult needs from two-thirds to three-quarters of a gram of protein per kilogram of body weight per day, to replace tissue wastage. Children require almost double the adult amount. Adults in normal life need one gram of protein per kilogram of body weight. An individual with glycosuria is not always a diabetic. Normally, following food, the glucose content of the blood behaves in a fairly constant manner. It may increase within an hour to as much as 160 milligrams per hundred cubic centimetres of blood, but should reach a normal level of 100 milligrams per 100 cubic centimetres in two or three hours. Glycosuria accompanied by other definite symptoms of diabetes may be considered as true diabetes. In the absence of symptoms other than glycosuria, blood sugar estimation is the only safe guide.

To obtain an estimate of the glucose burning ability of a diabetic it is first necessary to know the quantity of available glucose ingested. In other words, a known diet, properly balanced, (glucose and fat) must be prescribed, and it must be sufficient for the individual at rest. The following plan is suggested. Let "M" equal the total number of calories required by an individual at rest; 13% "M" equals the calories that must be derived from carbohydrates. By dividing the result by 4, (the number of calories obtained from one gram of carbohydrate) the weight of carbohydrate in grams is obtained. Similarly 12% "M" = calories derived from the protein and 75% "M" = calories from fat. Dividing the protein calories by 4 and the fat calories by 9, the respective weight values are obtained. The available glucose is estimated by adding together the weights of the total carbohydrate, 58% of the protein and 10% of the fat. A diet so calculated usually produces the desired re-

sult, that is, the patient is freed from troublesome symptoms. The urine becomes sugar free and the blood sugar approximately normal. Should such a condition not ensue, and the patient continue to excrete sugar, then for approximately each one and a half grams of sugar excreted, one unit of insulin should be given.

When a patient at rest has become freed from urine sugar then provision must be made for increased activity, and to enable him to replace loss of tissue. One gram of protein per kilogram of body weight per day is necessary for normal adult activity. The patient will certainly feel best when receiving this amount. But over half the protein is reckoned as "available glucose," so that an equal weight of fat may be added to the diet. Subsequent increases should involve carbohydrate. Here double the weight of fat for each gram of carbohydrate may be added without materially disturbing the fat glucose ratio. Too rapid increase in diet is not wise and may be accompanied by untoward results. Each increase in diet should not exceed two hundred calories. The administration of insulin should be in accordance with symptomatic requirement, with sufficient increases to balance dietary change to keep the patient glucose free.

Diet and excretion should be accurately recorded. The urinalysis should include examination for glucose and ketone bodies. Glucose excreted is best measured by a percentage estimation of the 24-hour specimen. The weight of glucose in grams may be determined by multiplying the percentage of glucose by the total hundreds of cubic centimetres collected, e.g. 2% glucose in 2,000 c.c. Weight of glucose = $2 \times 20 = 40$ gms. The sodium nitroprusside or Rothera test gives a fair estimate of the urine acetone and is a reasonably safe guide.

Too much administered insulin will produce a group of definite clinical symptoms, which, if not recognized early may lead to disastrous consequences. These symptoms may vary in different individuals. Usually the first evidence of overdose occurs two and one-half to three hours after administration. But this is by no means constant, and a reaction has been known to occur six or eight hours after insulin. The patient, having once experienced a "hypoglycemic reaction," should always be able to recognize the symptoms. Fairly constantly the

prodromal symptom is nervousness or tremours. The pulse in the early stages is rapid, but later, becomes slow and full. The patient complains of hunger. There may or may not be visual disturbance, diplopia or dimness of vision. As the reaction becomes more pronounced the palms become moist. The patient is bathed in cold clammy perspiration. Later, if the reaction is not halted, a state of unconsciousness with convulsive seizures going on to death may supervene.

The treatment of "reaction" is quite as simple as its cause. Glucose by mouth of course is best. Orange juice is convenient and pleasant, or one or two molasses candies may be preferred and are usually sufficient. However, any food is effective. Should unconsciousness have ensued a transient hyperglycemia can be produced with from seven to ten minims of a 1 in 1,000 adrenalin solution hypodermically. But this must be followed by carbohydrate by mouth, as the effect produced by adrenalin rapidly wears off, and the patient will lapse back into unconsciousness.

Certain general rules are suggested. Insulin up to 15 units per day may be given in a single dose. This single dose is best administered before breakfast or luncheon, eliminating the possibility of a reaction during the night. This time of administration has the advantage too, of keeping the blood sugar at a more constant level. When more than 15 units are necessary, it should be divided into two doses, administered before the morning and evening meals, with slightly more than half given in the morning. A longer period than a half-hour should not elapse between the administration of insulin and the taking of food. A thorough physical examination should always be made to ascertain the presence of foci of infection. Pyorrhoea, root abscesses, infected tonsils, are known to be potent contributing factors in causation of an upset carbohydrate balance.

The routine management of a case may be summarized as follows:—

1.—On a known diet, preferably one that will yield the minimum number of heat units necessary for life, the excretion of glucose is estimated.

2.—Insulin in sufficient dosage is then administered to render the urine sugar free.

3.—After relief from symptoms, the diet is gradually increased to a level sufficient for health and normal activity, rarely more than 2,700 calories.

By way of illustration the following fairly typical case report is submitted.

G. R. Male, age 41. Height 5 ft. 7½ in. Weight 140 lbs. (64 kilos). Aware of glycosuria past 3 months; polyuria, polydipsia, hunger and rapid loss of weight.

Examination.—Pyorrhoea, otherwise nothing except diabetes. Minimal caloric requirement was calculated $64 \times 25 = 1,600$ calories.

The diet prescription was estimated as follows:

$$\begin{aligned} \text{Fat} &= \frac{75\% \text{ of } 1,600}{9} = \frac{1,600 \times 0.75}{9} = 133 \text{ gms.} \\ \text{Carbohydrate} &= \frac{13\% \text{ of } 1,600}{4} = \frac{1,600 \times 0.13}{4} = 52 \text{ gms.} \\ \text{Protein} &= \frac{12\% \text{ of } 1,600}{4} = \frac{1,600 \times 0.12}{4} = 48 \text{ gms.} \end{aligned}$$

There was a marked improvement in symptoms by the fifth day. By the eleventh day he felt well and had been taught to administer his own insulin. He was discharged on the 17th day on the same diet and insulin dosage as received in hospital.

The following specimen diets are added, illustrating the type of diet possible, using this scheme. The average carbohydrate in 5% vegetables is reckoned as 3% and in 10% vegetables as 6%. "Food Values" by Edwin A. Locke furnishes some valuable food tables with both weights and common equivalents in terms of ordinary household measures.*

*The author wishes to render thanks to Dr. F. G. Banting and to Dr. Velyien E. Henderson for invaluable assistance and advice.

	DIET				URINE		BLOOD B. S.	INSULIN Units
	Prot.	Carb.	Fat	Tot. Glucose	Calories	Glucose	Acetone	
1st day	49	52	133	93	1601	27	++	—
4th "	49	52	133	93	1601	13	+	—
5th "	49	52	133	93	1601	13	—	10
7th "	49	52	133	93	1601	0	0	10
8th "	62	54	141	104	1733	0	0	15
9th "	62	67	164	119	1996	0	0	15
11th "	64	77	193	133	2301	0	0	15
12th "	64	77	193	133	2301	0	0	15
17th "	64	77	193	133	2301	0	0	15

DIET No. 1

Note:—Tbsp. means tablespoon. Meat is given in slices with the number of inches to the slice.

P. 51 C. 55 F. 144
Calories—1700

MORNING.

15 gms. 3 level tbsp. dry cooked oatmeal	2.4	10.1	1.
150 gms. $\frac{3}{4}$ cup grapefruit		7.5	
75 gms. $\frac{3}{8}$ cup orange			
3 oz. 6 tbsp. cream	1.8	2.1	2.5
10 gms. 1 square butter			8.5
40 gms. 4 thin slices, bacon cooked	4.2		16.
2 eggs	12.		12.
†brans			
	20.4	19.7	65.3

NOON

Clear broth			
75 gms. 5 x 3 x $\frac{3}{4}$ steak, lean tenderloin			
or 48 gms. 5 x 4 x $\frac{1}{4}$ roast beef plus 15 gms. butter	12.1		18.3
300 gms. 1 $\frac{1}{2}$ cup string beans, spinach, cabbage, cauliflower, tomatoes, marrow		9.	
or 150 gms. $\frac{3}{4}$ cup turnips, squash, canned peas, onions, carrots			
one custard	4.5	3.7	5.
10 gms. 1 square butter			8.5
1 oz. 2 tbsp. cream .....	.6	.7	9.6
†brans			
	17.2	13.4	41.4

EVENING

Clear broth			
60 gms. 5 x 3 $\frac{1}{4}$ x $\frac{1}{4}$ cold ham or tongue			
or 2 eggs			
or 30 gms. 2 $\frac{1}{2}$ x 2 x $\frac{1}{4}$ cold ham plus 20, 1 tbsp., gms. yellow cheese			
or 60 gms. $\frac{3}{8}$ can canned salmon plus 8 gms. butter	12.5		13.8
300 gms. 1 $\frac{1}{2}$ cup vegetables as per dinner		9.	
100 gms. $\frac{1}{2}$ cup orange or cranberries		10.	
or 75 gms. $\frac{3}{8}$ apricots, apples			
or 50 gms. $\frac{1}{4}$ cup prunes			
2 oz. 4 tbsp. cream	1.2	1.4	19.2
10 gms. 1 square butter			8.5
†brans			
	13.7	20.4	41.5
Total	51.3	53.5	148.2

DIET No. 2

Note:—Meat is given in slices with the number of inches to the slice

P. 60 C. 65 F. 167
Calories—2000

MORNING

30 gms. 6 level tbsp. cooked oatmeal	4.8	20.2	2.
150 gms. $\frac{3}{4}$ cup grapefruit		7.5	
or 75 gms. $\frac{3}{8}$ cup orange			
3 oz. 6 tbsp. cream	1.8	2.1	28.8
10 gms. 1 square butter			8.5
40 gms. 4 thin slices bacon,			

cooked	4.2	12.
2 eggs	12.	12.
†brans		
	22.8	29.8
		66.3

NOON

100 gms. 7 x 4 $\frac{1}{4}$ x $\frac{3}{4}$ steak, tenderloin	16.2		24.4
or 64 gms. 8 x 6 x $\frac{1}{4}$ roast beef			
or 70 gms. 1 cup salt cod fish plus 25 gms. butter			
or 120 gms. 1 large pork chop (lean) minus 4 gms. butter at meal			
300 gms. string beans, egg-plant, cabbage, cauliflower, tomatoes, spinach, marrow		9.	
or 150 gms. $\frac{3}{4}$ cup turnip, carrots, onions, squash, canned peas			
one custard			8.5
10 gms. 1 square butter			9.6
1 oz. 2 tbsp. cream .....	.6	.7	
†brans			
	21.3	13.4	47.5

EVENING

Clear broth			
60 gms. 5 x 3 x $\frac{1}{4}$ cold ham or tongue	12.5		13.8
or 2 eggs			
or 30 gms. 2 $\frac{1}{2}$ x 2 x $\frac{1}{4}$ cold ham plus 20, 1 tbsp., gms. yellow cheese			
or 60 gms. $\frac{3}{8}$ can canned salmon plus 8 gms. butter		9.	
300 gms. 1 $\frac{1}{2}$ cup vegetables as per dinner			
100 gms. $\frac{1}{2}$ cup orange or cranberries		10.	
or 75 gms. $\frac{3}{8}$ cup apricots or apples			
or 50 gms. $\frac{1}{4}$ cup prunes			
2 oz. 4 tbsp. cream	1.2	1.4	19.2
10 gms. 1 square butter			17.
one custard diabetic	4.5	3.7	5.
†brans			
	18.2	24.1	55.0
Total	62.3	67.3	168.8

†BRANS

3 cups dry washed bran
3 tbsp. India Gum
 $\frac{1}{2}$ tbsp. salt
1 tsp. cinnamon
1 tsp. nutmeg
1 gr. saccharin

Mix dry ingredients thoroughly, add hot water to make soft dough. Spread in thin layers in pans greased with mineral oil; cut in squares. Bake in slow oven until crisp, usually two or three hours.

Brown's Bread Ltd. of Toronto, manufacture a product conforming to this formula.

†BAKED CUSTARD

1 cup milk
1 egg
1 gr. saccharin
few grs. salt

Prepare in the usual way and make into three custards. Value of each custard: P. 4.5; C. 3.7; F. 5.

THE ASSOCIATION OF PULMONARY AND BONE AND JOINT TUBERCULOSIS*

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THIS paper is based upon a study of the histories of adults suffering from bone and joint tuberculosis who have been under observation in the Galloway-Gibson Clinic during the past eighteen months. Throughout that period we endeavoured to make a complete physical and x-ray examination of the chest in all cases. For various reasons this was not always possible, but 30 histories are available in which full examinations are recorded, and the results in the thirty cases are tabulated below. It is well known that bone and joint tuberculosis is much more common in early life. It is, however, difficult to interpret the physical and x-ray signs of chest involvement in children so that this study was limited to those over 16 years of age.

It was formerly taught that the reason for the frequent involvement of the lung in tuberculosis was that the bacilli gained access to the body by inhalation. Later investigation goes to show that the explanation is not so simple. Krause¹ has written very clearly and convincingly on this subject. His conclusions may be summarized as follows:—

Whereas tuberculous infection is experimentally possible by inhalation of sprays or dust containing the bacilli; by ingestion of tuberculous meat or milk; and by inoculation, subcutaneous, intravenous, intramuscular, or intrathecal of tubercle bacilli; the source of infection in our patients is usually human sputum or cows' milk or anything contaminated by these, and the bacilli enter the body by ingestion and not by inhalation or inoculation. Once inside the mouth they may pass the epithelial barrier into the lymph spaces anywhere along the digestive tract, but most often, he believes, in the tonsils. Having gained the lymph spaces they may or may not set up de-

monstrable local lesion or lesions in the lymphatic glands, but they must, if they are to find their way to the distant parts of the body, proceed via the lymphatic vessels and the subclavian veins to the right side of the heart, and so to the lungs. While here they again enter the lymph spaces and set up local lesions or are carried by the lymphatic vessels to the tracheo-bronchial glands. Lesions forming here and breaking down involve the lung tissue by contiguity. Those bacilli that pass the glands again find their way through the larger lymphatic vessels and subclavian veins to the right side of the heart to renew their attack upon the lungs. So that, to quote Krause's words, "toward the lung and tracheo-bronchial nodes, distribution tends always to be convergent and cumulative; away from the lung and tracheo-bronchial nodes it is divergent and dispersive."

No doubt the same paths are followed by other micro-organisms, but the tubercle bacillus has a special affinity for lung tissue. It would be surprising, therefore, if bone and joint tuberculosis were not frequently complicated by lung infection.

It is established that pulmonary tuberculosis in adults is usually caused by the human type of bacillus, seldom by the bovine type. There appears to be no foundation for the popular impression that the contrary holds for bone and joint tuberculosis. The relative importance of the two types appears to vary in different localities. Fraser² of Edinburgh found the bovine bacillus responsible for 58.6 of his 70 cases of bone and joint tuberculosis, but the only adults in this series, three in number, were infected by the human type of bacillus. A. S. Griffith,³ summed up the results in all cases investigated by the bacteriologists who carried out the practical work for the British Royal Commission. There were 392

*Read before the Manitoba Medical Association at Brandon, Man., Oct. 12, 1923.

bone and joint cases, and the bacillus was bovine in type in 19.9%, but in fifty-two adult cases the percentage fell to 5.8. Parke and Krumwiede⁴ studying American patients, in 28 adults found the bovine type only once. Cole⁵ of Saint Paul, in a recent article refers to a report of the Imperial German Board of Health in which ninety-nine cases of all ages were investigated, and only five found to be bovine. One may sum up, therefore, by saying that whereas the bovine type of bacillus is an important factor in bone and joint tuberculosis in children in some localities, it accounts for only a small proportion of adult cases, and there is no important difference between bone and joint tuberculosis and pulmonary tuberculosis in this respect.

In passing it might be worth while to mention that cervical adenitis gives a large proportion of the bovine type of bacillus,—ninety per cent. of Mitchell's⁶ seventy-three cases observed in Edinburgh as an extreme instance. One is reminded that cervical adenitis is essentially a disease of childhood. It would appear in fact that the age of the patient and not the site of the lesion is the most important factor, tuberculosis in young children being not uncommonly caused by the bovine type. Further, if Krause's exposition of the mode and spread of infection is correct, cervical adenitis would be the first lesion to form after ingestion of the bacilli, so that the bacilli setting up cervical adenitis would be comparatively "new comers" to the host. These considerations suggest that possibly the bovine bacillus, after long residence in the human body, may acquire the characteristics of the human type. Many arguments have been advanced, for and against this view, but at present the question of mutation of type is undecided.

Of our thirty patients eighteen were men and twelve women. The oldest patient at the time of examination was fifty-one, and the youngest sixteen, the average age being 31.7. In one the onset of the lesion for which relief was sought was in early childhood. In the remaining twenty-nine the age of onset in the oldest was fifty and in the youngest sixteen, the average being 28.6.

The tendency to multiple lesions is shown in Table II. It will be seen that sixteen patients had a lesion in the spine. Two of these had

two separate foci, a not unusual phenomenon in Potts' disease, and one that is easily overlooked, as recently pointed out by Peabody.⁷

The other bony lesions were distributed as follows: The hip in five patients, the knee in five, the foot in three, the elbow in three, the wrist or hand in three, the shoulder in one and the sterno-clavicular joint in one. This makes a total of thirty-nine bony lesions in thirty cases. In addition there were three cases of genito-urinary tuberculosis, and one of tuberculous peritonitis. One patient, a chronic consumptive, has since died of meningitis.

There were several cases which illustrate the fact that multiple lesions do not necessarily mean virulent infection. The following serve as examples:

CASE X.—H. F. Age 31, garage man; had pleurisy at the age of twelve and was treated in a sanatorium for six months. Subsequently he enjoyed average health until the age of twenty-eight, when both epididymi became involved. The next year he had a definite hemoptosis, but continued at work. A year later he came in with a tuberculous tarsus. He was treated for twelve months by local rest. Now, two years after the onset of the disease in the foot, he is working hard. X-ray showed old calcified disease in both upper lobes.

CASE XVII.—C. N., male, age 29, farm labourer. When twenty-two had a perineal abscess which was incised and has left a permanent urinary fistula. Later, in the same year, he had a fusion operation for Potts' disease. When twenty-five his left epididymis became swollen, and it broke down two years later. One year ago his right shoulder became involved, and is typically tuberculous. X-ray of the lungs showed fine mottling in the circle of the first rib, and on the left a marked ground-glass appearance. His Wassermann reaction was negative. He reported for examination in November, and had done a man's work all through the harvest.

Twenty, or two-thirds of the cases showed definite evidence of lung involvement and are classed as positives. Of the remaining ten several showed some evidence of pulmonary infection, but were finally classed as negative. Perhaps some of them should not have been so classed.

In the twenty positive cases the history seemed to show that the pulmonary preceded the bone or joint disease in eleven, whereas the contrary was true in four, and in five there was no history of pulmonary disease. It must be remembered, however, that it is very often impossible to fix the date of onset of pulmonary tuberculosis. A point of special interest is that nine of the positive cases, or almost one-third of the total number of cases reviewed gave a history of pleurisy.

TABLE I
Summary of Thirty Cases of Bone and Joint Tuberculosis

Case				Bone or Joint Tuberculosis		Other Tuberculosis		Pulmonary Tuberculosis	Age of Onset	Result of Examination
No.	Initials	Age	Sex	Site—Age of Onset		Site—Age of Onset		Evidence		
1	Mrs. W. A.	35	F	Spine	33	Periton-eum	33	Pleurisy with effusion. x-ray, right ground glass with adherent diaphragm. Left, small area of infiltration in circle of first rib.	32	Positive
2	V. A.	38	M	Spine Hip	37	.....		Calcified masses up to the size of a small pea, most marked in the left which is cloudy.		Positive
3	M. B.	26	F	Hip	Early child-hood	.....		Faint clouds in circle of first rib (right) carried up from a cloudy vertebral trunk.		Negative
4	C. B.	25	F	Metacar-pal Tarsus	23 24	.....		None.		Negative
5	F. B.	19	M	Spine	18	.....		T. B. in sputum. x-ray and P.E. shows cavity, etc.		Positive
6	J. S. C.	46	M	Hip Spine	41 Early child-hood	.....		None.		Negative
7	Mrs. P. C.	42	F	Spine	39	Kidney	36	Pleurisy, age 36. x-ray shows on right side opacities in circle of first rib, interlobular pleurisy, ground glass appearance of base.	36	Positive
8	E. C.	39	M	Elbow	37	Died of meningi-tis	40	Pleurisy. T. B. in sputum, X-ray and P.E. show cavity, etc.	27	Positive
9	U. E.	23	F	Metacar-pal	23	.....		"Pneumonia," twice, age 19 and 20. Right pleuritic rub and crepitations. X-ray, increased density on right side.	19	Positive
10	H. F.	31	M	Tarsus	30	Both epi-didymi	29	Pleurisy. Haemoptosis, age 29. X-ray, calcified areas in left upper lobe, and cloudy, calcified opacities in right.	12	Positive
11	W. H.	25	M	Spine	25	.....		Pleurisy. X-ray, left, ground-glass appearance below with fine mottling in both upper lobes.	25	Positive
12	Mrs. G. L.	33	F	Tarsus Elbow, Sterno-Clav. Jt.	30 31 32	.....		Pleurisy with effusion. X-ray, left diaphragm adherent, opacities in both upper lobes.	30	Positive
13	H. W. L.	29	M	Hip	22	.....		Left diaphragm adherent opacities in both apices		Positive
14	B. L.	51	M	Knee	50	.....		Dense snow storm all parts both lungs. T.B. in sputum.		Positive
15	R. L.	23	M	Spine	22	.....		Cough on and off for two years.		Negative

TABLE I. *Continued*
Summary of Thirty Cases of Bone and Joint Tuberculosis

Case				Bone or Joint Tuberculosis		Other Tuberculosis		Pulmonary Tuberculosis	Age of Onset	Result of Examination
No.	Initials	Age	Sex	Site—Age of Onset		Site—Age of Onset		Evidence		
16	W. M.	30	M	Spine	28	.....		None.		Negative
17	C. N.	29	M	Spine Shoulder	22 28	Urethral Fistula Epididymus R. Epididymus L. Phlyctenular Conjunctivitis	21 23 25 28	X-ray, right, fine mottling circle of 1st. rib. Left, ground-glass appearance.		Positive
18	J. H. P.	34	M	Spine	31	.....		None.		Negative
19	M. R.	50	M	Knee	45	.....		None.		Negative
20	A. R.	16	M	Knee	16	.....		None.		Negative
21	L. S.	35	F	Spine	28	.....		T. P. in sputum. P.E. and x-ray examination, typical of chronic ulcerative phthisis.	27	Positive
22	G. S.	28	M	Wrist	26	.....		"Pneumonia" and pleurisy. X-ray shows snowstorm both lungs.	23	Positive
23	H. E. S.	37	M	Spine Thoracic-lumbar Lumbosacral	34 ?	.....		Pleurisy with effusion. X-ray shows opacities both upper lobes. Left ground-glass appearance and retraction of ribs.	33	Positive
24	Mrs. F. T.	24	F	Knee	22	.....		T.B. in sputum. X-ray shows snowstorm throughout both lungs with cavity left base.		Positive
25	Mrs. I. W.	40	F	Spine	16	.....		Pleurisy. X-ray shows dense calcified masses in both upper lobes. Left side indrawing and ground-glass appearance.	18	Positive
26	J. A. W.	25	M	Hip 9th and 11th Thoracic Spines 5th Lumbar Spine	3 24 ?	.....		Haemoptosis, age 25. Opacities in both upper lobes, some on left side calcified.		Positive
27	Mrs. D. E. W.	48	F	Knee	39	.....		X-ray shows snowstorm throughout.		Positive
28	E. J.	17	F	Spine	16	.....		Feathery infiltration of left apex.		Positive
29	C. S.	20	F	Elbow	17	.....		Mottling in circle of first left rib.		Negative
30	H. J. P.	32	M	Spine	29	.....		Faint mottling and cloudiness upper half of left lung.		Negative

There was one group of nine cases in which the history showed a recent onset or "flare-up" of pulmonary disease followed in a few months by bone or joint involvement. The following case is typical of this group, and also illustrates the tendency to multiple lesions:

CASE XII.—Mrs. G. L., housewife, age 33, had in 1919 an attack of what was regarded as mild influenza followed by a cough for some weeks, since which time she had not felt quite well. In the autumn of the same year the right ankle began to bother her and she had that foot amputated in December, 1920, because of tuberculous disease. In January, 1920, she had pleurisy with effusion. A few months later her right elbow began to be sore. It was finally excised in July, 1923, and the tissue when examined microscopically was typically tuberculous. In May, 1921, the sterno-clavicular joint became involved, was operated upon and healed after several months. During all this time she had never been very ill, and when last seen was enjoying good general health.

Eight of the cases either had been or were at the time of examination suffering from active pulmonary tuberculosis. Most of these fall also in the last mentioned group. A typical example is the following:

CASE XXII.—G. S., male, age 28, farmer, was taken ill in May, 1919, with what was diagnosed as pneumonia. He had been ailing ever since. During the following year he had what his doctor called pneumonia and pleurisy, each once. His wrist began to bother him in the spring of 1921, and in May, 1922, when he was examined, the bones and joints of the carpus were pretty well disorganized, and there was abscess formation in this situation. X-ray of the chest showed a "snow storm" throughout both lungs, most marked in the upper half.

The bone or joint lesions in the ten cases classed as negative were for the most part mild, and will, I believe, run a comparatively favourable course. They probably represent the cases with good resistance to the tubercle bacillus. No doubt pulmonary infection had occurred in most or all of them, but had left so little evidence that we failed to find it.

Before closing I wish to draw your attention to some figures kindly supplied by Dr. D. A. Stewart, Superintendent of the Manitoba Sanatorium at Ninette. So far we have considered the subject from the standpoint of the orthopaedic clinic. The following statistics permit us to glance at it from another angle.

TABLE II.

Showing the Distribution of Lesion in Thirty Cases of Bone and Joint Tuberculosis

No.	Case, Initials	Spine	Hip	Knee	Foot	Elbow	Wrist or Hand	Shoulder	St. Clav. Jt.	Lung	Other Lesions
1	Mrs. W. A.	—	—	—	—	—	—	—	—	—	Peritoneum
2	V. A.	—	—	—	—	—	—	—	—	—	
3	M. B.	—	—	—	—	—	—	—	—	—	
4	C. B.	—	—	—	—	—	—	—	—	—	
5	F. B.	—	—	—	—	—	—	—	—	—	
6	J. S. C.	—	—	—	—	—	—	—	—	—	
7	Mrs. P. C.	—	—	—	—	—	—	—	—	—	Kidney
8	E. C.	—	—	—	—	—	—	—	—	—	Died of Meningitis
9	U. E.	—	—	—	—	—	—	—	—	—	
10	H. F.	—	—	—	—	—	—	—	—	—	Both epididymi
11	W. H.	—	—	—	—	—	—	—	—	—	
12	Mrs. G. L.	—	—	—	—	—	—	—	—	—	
13	W. H. L.	—	—	—	—	—	—	—	—	—	
14	B. L.	—	—	—	—	—	—	—	—	—	
15	R. L.	—	—	—	—	—	—	—	—	—	
16	W. M.	—	—	—	—	—	—	—	—	—	
17	C. N.	—	—	—	—	—	—	—	—	—	Epididymis Phlyctenular Conjunctivitis
18	J. H. P.	—	—	—	—	—	—	—	—	—	
19	M. R.	—	—	—	—	—	—	—	—	—	
20	A. R.	—	—	—	—	—	—	—	—	—	
21	L. S.	—	—	—	—	—	—	—	—	—	
22	G. S.	—	—	—	—	—	—	—	—	—	
23	H. E. S.	2	—	—	—	—	—	—	—	—	
24	Mrs. F. T.	—	—	—	—	—	—	—	—	—	
25	Mrs. I. W.	—	—	—	—	—	—	—	—	—	
26	J. A. W.	2	—	—	—	—	—	—	—	—	
27	Mrs. D. E. W.	—	—	—	—	—	—	—	—	—	
28	E. J.	—	—	—	—	—	—	—	—	—	
29	C. S.	—	—	—	—	—	—	—	—	—	
30	H. J. P.	—	—	—	—	—	—	—	—	—	
Total		16	5	5	3	3	3	1	1	20	

During the three and one-half years preceding the beginning of this year, 1,058 adults suffering from pulmonary tuberculosis have been under treatment in the Manitoba Sanatorium. Twenty-eight of these, or 2.7% had bone or joint lesions. There were seventeen spines, five knees, three wrists, three ribs, two hips, and one each of the ankle, radius and elbow, a total of thirty-three lesions in twenty-eight patients. The distribution is strikingly parallel to that of our thirty cases. The figures illustrate the fact that osseous tuberculosis is not a frequent complication of phthisis.

In conclusion, there are four points which this study has emphasized:

(1) Tuberculosis in adults is a general disease in which lesions of the lung are almost always present.

(2) Bone or joint tuberculosis is not a frequent complication of pulmonary tuberculosis.
 (3) Evidence of pulmonary infection can be found in the majority of adults suffering from bone or joint tuberculosis.
 (4) A large percentage of adults with bone or joint tuberculosis are definitely ill with pulmonary tuberculosis, or are in danger of becoming so, and this fact must be borne in mind in deciding upon the treatment of each patient.

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THROMBOSIS AND EMBOLISM

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EVER since the inception of surgery, the object of all surgeons has been to reduce the risk attached to any operative procedure, no matter how trivial the operation. Every operation has its percentage of risk, though this has been greatly diminished since the introduction of asepsis and of our modern knowledge of how to combat shock. These two important factors have been practically removed as sources of danger; one condition, the dread of the surgeon, that of thrombosis and especially of embolism, still remains.

A great deal has been written and many opinions have been brought forth concerning this subject; some of these I wish to present to you this morning.

Several etiological factors are usually given as necessary for the formation of a thrombus and its subsequent embolism.

- 1.—Trauma, especially injury of the endothelial lining of the vessel.
- 2.—Slowing of the blood stream.
- 3.—Chemical changes in the blood itself.
- 4.—Infection and necrosis.

In 1915 we performed a number of experiments upon dogs, the results of which were published at that time. A year ago we repeated these and performed some new ones.

Experimentally, thrombosis is a difficult subject to investigate, on account of the difficulties in blood vessel surgery generally, and of the difficulty experienced at post-mortems in finding the lodged embolus. Further, the conditions under which thrombosis may arise in the human being are hard to imitate; we may add, one is confused by the fact that so many etiological factors are given. In experimentation we were impressed with the amount of injury that a vein can withstand without the formation of a thrombus at the site of injury. In our daily work all of us avoid injury to the vessels as much as possible with this fear always in our minds.

The result of our experiments may be stated as follows:

1. Simple crushing of a vein will not cause a thrombus, repeated crushings at forty-eight hours intervals will not form a clot at this site.

Examination at the end of two weeks showed a thickening of all the coats of the vein, due to fibrous tissue; the intima remaining smooth and glistening.

2. Crushing a vein with staphylococci introduced at the time of the crushing did not cause a thrombus.

3. Introduction into the lumen of the vein of a sterile thread about half an inch in length, so suspended as to oscillate in the blood stream caused no thrombus at the end of five days, either at the point of introduction or attached to the thread itself.

4. Introduction of a thread infected with staphylococcus albus or aureus or with colon bacillus will in four or five days, cause a thrombus at the point of introduction of the infected thread. The thrombus is attached to the vein at the site of the entrance of the thread. It will not entirely occlude the lumen of the vein, but will enlarge in the direction of the blood stream.

5. Sterile threads, one inch in length, let go in the circulation, at the end of seven weeks had caused no symptoms.

6. An infected thread (colon bacillus) one inch long, let loose in the blood stream, caused a sudden death in three and a half days. Post-mortem examination showed a sero-purulent fluid in the pleural cavity, and the embolus (thread with blood clot infected with colon bacillus around it) was found in the right lung.

7. We were unable to produce a thrombus with tubercle bacilli at the end of seven and twelve weeks.

On examination of the thrombus it is readily seen how such an embolus could be easily torn away from its frail attachments, circulate and become lodged somewhere in the pulmonary circulation and perhaps produce a fatal termination as occurred in our experiment just noted.

To conceive of the same conditions being produced in a patient as were created in the dogs in an experimental way is difficult, but the difficulty of producing thrombi experimentally has led us to believe that infection plus necrosis or some toxin produced by both of these is the basis of thrombosis and subsequent emboli.

Is it not possible that a thrombus appearing after an apparently surgically clean operation could have been caused by necrosis of certain

tissues, or be caused by these tissues being cut off by ligatures harbouring a low grade infection and subsequently liberating the substances necessary for the formation of the clot in its surrounding structures? Conditions other than surgical form thrombi; these are seen in infectious diseases, such as typhoid fever where we see thrombosis of the femoral or long saphenous veins; it has been noted also in mumps and in scarlet fever. Thrombosis of the lateral sinus and the internal jugular vein in cases of middle ear and mastoid infections is probably the most common. These conditions are often present even when there has not been any surgical intervention.

STATISTICS

The statistics show that thrombosis and embolism follow most frequently pelvic operations for pelvic tumours.

The late Dr. Schenek, reported that in forty collected cases fifty-eight per cent. followed pelvic tumour operations. Our records show that in sixteen hundred and ten laparotomies from 1913 to 1915, thirty-three cases or 2.2 per cent. were followed by thrombosis or embolism.

9 cases of fatal embolism.

3	"	"	pulmonary	"	(recovery).
2	"	"	"	"	lung abscess, (recovery).
2	"	"	liver	"	hepatic abscess, one recovery.
2	"	"	cerebral	"	followed by death.

Of the eighteen cases, eight or 44.4 per cent. followed prostatectomies, or pelvic operations. There was one upper abdominal operation with embolism and recovery. In the last two years and a half in 1977 operations, we have had eight emboli, six of which were fatal, and all of which were pulmonary.

Hysterectomy	.....	2	
Prostatectomy	.....	1	
Gastro-enterostomy	...	1	
Gall bladder	.....	2	one fatal, one recovery.
Appendectomy (pus)	..	1	
Infected knee joint	....	1	recovery.

In only one of these cases was there any evidence so far as could be obtained of any thrombus previous to the embolism. Undoubtedly the condition must have existed in some of the smaller pelvic veins. Had it existed in the larger veins or the vein of the leg, there would have been some complaint or evi-

dence. In the one case in which the evidence was manifested beforehand, the patient complained of pain in the calf of the left leg. There was some elevation of temperature and swelling of the limb. This appeared on the eighth day, the patient was kept in bed for two weeks with the leg elevated on a pillow wrapped in a bandage and ice bags were applied; she was allowed out of bed and four days later she had pulmonary embolism from which she recovered. This patient's operation was for pathological conditions in gall bladder and appendix. It has been our observation that the manifest thromboses are not those that generally cause the fatality and also that the fatal cases of embolism do not usually give the history of previous trouble. Embolism may occur when the patient is still in bed or several days after he has been up and around.

The most striking evidence of the theory of necrosis plus a non-virulent infection causing the thrombosis, is presented in the cases of pyosalpinx, where the whole necrotic Fallopian tube can be removed from the adjacent structures with only slight oozing from the new-formed capillaries. Also we see in cases of gangrenous and necrotic appendicitis that the whole tissue may slough away without any bleeding, as all the blood supply is thrombosed from the infection and necrosis.

We know that thrombosis follows septic cases more often than clean ones. In this type of case the inciting infection is quite evident, and with the inflammation there is in the first stages slowing of the blood stream. This combination we consider the explanation of septic cases forming together the greater percentage of post-operative thrombosis; we have here two of the main agents upon which thrombosis depends.

Thrombosis and its subsequent emboli usually do not occur before the seventh day, and as a rule not after the twenty-first, though a few cases of emboli are reported between the fourth and eighth week. The process is rather slow but necrosis of the tissue on which thrombosis depends is not a rapid process. The thrombus usually takes a week or ten days to appear, it may remain undisturbed almost indefinitely or may break away immediately or vary in its time of separation; consequently the appearance of an embolism is inconstant. Most

thromboses are found in the long saphenous, femoral or external iliac veins, with the exception that in sinus disease the internal jugular is a most common site of thrombosis.

Many cases of thrombosis are ascribed to pressure of retractors and to injury of the veins, especially of the deep epigastric, during the course of an operation, the thrombus forming in the deep epigastric is propagated to the femoral. This has been seen, but the evidence is against the claim that injury to a vein alone causes a thrombus, and further a thrombus is not infrequently seen on the side opposite to the one on which the traction on the deep epigastric was made. This is clearly shown in the gall bladder case above mentioned, where the thrombosis took place in the deep veins of the left leg.

This it seems would show that some condition other than stagnation must help in the production of this condition. Thrombosis of the femoral and long saphenous veins are in about the same percentage. We have never seen embolism from the long saphenous. Whether or not the reason for this is that this vein lies away from the pounding of the femoral artery, (the state of affairs as concerns the femoral vein) we cannot say, but this seems to be a possible explanation.

SUBSEQUENT EFFECTS OF THROMBOSIS AND EMBOLI

Where a thrombus does develop there is always a question of how much permanent damage will be done, whether the limb will ever regain its normal size and circulation. The treatment consists practically in elevation and rest, in firm though not tight bandaging. It is very hard to keep the patient in bed and after three weeks they usually insist upon getting up. We consider that if the patient can be kept quiet for three weeks following the development of the thrombus practically all the danger of an embolus has passed. We have found in those cases of thrombosis which have not entirely cleared at the end of six months, that it is usual for the leg to remain larger and for the circulation to be disturbed for the rest of life. In these cases we advise elastic stockings.

The cases of sudden death without distress following operation are always those in which there is doubt as to the cause of death, because at the post-mortem the cause cannot always be

found. These cases are often classified as emboli. This is an unsettled question.

The typical pulmonary embolism is one in which the patient has a sudden acute pain in the chest accompanied by dyspnoea in a degree depending upon the size of the clot and the area of lung blocked off. In the smaller emboli the dyspnoea is not so intense, but in the larger ones, those in which so much of the arterial area is blocked, the distress is very great, due to the disturbed heart action rather than to the diminution of the air space. Death is due to the sudden strain put upon the heart. We have found that those patients who show signs of improvement from the first shock by the end of fifteen or twenty minutes, usually recover from the embolus, though they may succumb to infection later on. In the fatal cases the patient usually passes out in a few hours. In the non-fatal cases the distress passes somewhat in a few hours (usually inside of twenty-four to forty-eight), the temperature elevates to 100 or 101 degrees; a cough develops in a few days; the sputum is tinged with blood; on chest examination one finds dullness, tubular breathing and friction, these sounds of course depending upon the nearness to the surface of the infarct. These cases may recover without any further trouble or may go on to pus formation with empyema or lung abscess and are to be treated accordingly.

It is hard to conceive how other than a pulmonary or hepatic embolism can develop from this condition. For a cerebral embolism to develop, the clot must pass through the heart to the lung and through it. It does not seem reasonable to believe that this can occur

through the extremely small capillaries; a few might occur through a patent foramen ovale. A case came to our notice several years ago in which a cerebral embolism was supposed to be present following pelvic operation. This patient lived forty-two days and had all the evidence of a cerebral complication with hemiplegia, etc. At the post-mortem this patient was found to have a pulmonary embolism with oedema of the brain; no cerebral emboli could be found.

When a pulmonary embolism occurs, the time for action is so short that by the time anything can be done the patient has usually passed away or is showing signs of recovery. We give morphine and avoid stimulants.

CONCLUSIONS:

- 1.—Endothelial damage in the vessel is not a cause of thrombosis.
- 2.—Infection and necrosis or some toxin derived therefrom are probably the most important factors.
- 3.—Slowing of the blood stream is a contributory cause.
- 4.—An embolus is a portion of the thrombus; the damage it does is dependent upon its size, and upon where it lodges and upon the amount of over-exertion it places upon the heart; it may or may not cause infection in the lung.
- 5.—That the apparent thromboses are not those from which emboli usually arise.
- 6.—Preventing the thrombus formation is the only means of preventing the embolus. A sure method of prevention is not included in any form of treatment or prophylaxis.

Urologic Phase of Pernicious Anaemia—Ira R. Sisk, Madison, Wis., reports the case of a man aged 57, whose symptoms of difficult urination and retention of urine were due to the spinal cord changes in early pernicious anaemia rather than to obstruction from the prostate gland. Sisk says that in some cases the bladder symptoms may develop early in the course of the disease and before a diagnosis of pernicious anaemia has been made. In elderly men, the

urinary symptoms of pernicious anaemia may be confused with those of hypertrophy of the prostate gland, unless accurate means of diagnosis are employed. In cases of spinal cord bladder in pernicious anaemia, as in spinal cord bladder from other causes, the close co-operation of the neurologist, internist and urologist is of great importance.—*Jour. Am. Med. Ass.* Nov. 17, 1923.

THE TREATMENT OF EXOPHTHALMIC GOITRE WITH REPORT
ON A SERIES OF CASES TREATED*

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EXOPHTHALMIC goitre is a disease for which no specific remedy applicable to all cases has yet been determined. Even the most sanguine and enthusiastic promoters of any form of treatment are unwilling to admit that they have a panacea for all cases of this disease, they having learned by experience that there exist two insurmountable barriers, one of which may sometimes block the path to a terminal ideal result: (1) Mortality while under treatment; (2) Morbidity still existing at conclusion of treatment. Having conscientiously determined what seems the best therapeutic procedure for the patient in question, every possible effort should be energetically carried out to overthrow the barriers just mentioned. No matter what form of treatment is instituted, the onus in case of death, or where a permanent degree of invalidism results, must be placed, to a large degree at least on the medical man advising and carrying out such treatment. He in turn has a right to justify his judgment and skill by asking the question, "What was the alternative treatment? Had it more to offer?"

This disease is met with in so many different degrees of intensity, ranging from the very mild to the severe type, that no definitely standardized regime of treatment will apply to all cases. Each individual case has to be judged on its merits before treatment is begun. The uncertainty of the course of the disease adds to the difficulty, as there is no one typical course to which all cases conform. By this I mean, two apparently similar cases in point of severity and duration of illness may be observed, the same treatment or no treatment in both cases may be meted out; one may immediately start to improve, and be well in a few months, the other may be dead in a very short time. There are some who hold that exophthalmic goitre does not kill if untreated,

or if treated by rest alone. This theory of course is untenable in the face of the facts, many cases having died where no treatment other than rest has been given.

The question then arises, how can exophthalmic goitre be cured most safely and most thoroughly? In the light of our present scientific knowledge the answer to this I would say, is removal of all excess thyroid epithelium, leaving only enough for the requirements of the normal body.

The subject of this paper consists of a series of cases treated surgically, the objective in each case being the removal of all excess active thyroid tissue on as safe a plan as possible, and the restoration of the patient to health. This involves the use of other therapeutic agents in addition to operation. I refer to rest, diet, medication, and a host of more simple agents, all of which are carefully fitted in to form a system of management whereby the desired operative measures may be carried out most safely, and a full measure of health obtained before the discharge of the patient.

The chief therapeutic agents used in this series are:—

(1) *Rest*.—This is one of the greatest therapeutic measures for hyperthyroidism of this type. By rest I mean complete physical and mental rest, absolute bed confinement in the severe cases, no visitors other than the most intimate and congenial members of the patient's family, and these as infrequently as compatible with the mental ease of the patient. All matters of care and business should be carefully interdicted.

(2) *Medication*.—Opium or one of its derivatives constitutes the sheet anchor in this field, especially in the part played by drugs in the surgical treatment of this disease. Bromides and hydrobromate of quinine seem less efficient, although the latter is often used over a long period of time.

*Read before the regular meeting of the Winnipeg Medical Society, May, 1923.

(3) *Diet*.—Full diet, but with the elimination as carefully as possible of foods such as meats having a high iodine and tryptophane content.

(4) *Operation*.—The operation performed and the time chosen will depend entirely on the condition of the patient. The operation should not be so extensive as to narrow unduly the margin of safety to the patient.

This series consists of 51 cases of exophthalmic goitre on whom I performed thyroidectomy between August, 1921 and April, 1923, a period of twenty months. In 14 of these cases (approximately one quarter) a preliminary ligation was done two to three and a half months before thyroidectomy, and in two of these cases one lobe was first resected, the second being resected a short time later. This makes a total of 67 operations on 51 cases; 1 operation on 37 cases, 2 operations on 12 cases, and 3 on two cases.

The plan of management in this series varied with the individual case. In practically all cases the patient was put to bed in hospital and carefully observed for a few days at least, during which time careful clinical observations were made, and basal metabolic readings taken. In this way, the true degree of sickness can be fairly accurately judged, and the form of treatment chosen. If the patient seems a safe risk for bilateral resection this is done without further delay under the usual technique. If there is any doubt as to the risk, the patient is observed over a longer period of time, the principles of rest as already enunciated being carried out. If no improvement follows a reasonable period of rest, the most favourable condition of the patient is taken as the time for ligation of both superior thyroid arteries. This mildly traumatizing operation is done under gas and oxygen analgesia and local, (novocaine, never with adrenalin). The knowledge of the impending operation is not divulged to the patients, and their first acquaintance with it is made on their return to full consciousness following the operation. These cases of ligation I have done in their bed on the flat.

In this series of 51 thyroidectomies I first ligated the superior thyroid arteries in 14 cases two to three and a half months prior to thyroidectomy. The advantages claimed for preliminary ligation are many. It prevents a long uncertain course, shortening greatly the period of

time elapsing before the patient is in condition for thyroidectomy, and lessening the tendency to severe organic lesions in cardiovascular and sympathetic nervous systems, so constantly following prolonged thyroid intoxication. If rest alone is carried out, the patient, after several months of bed confinement, finding himself no better, very often becomes dissatisfied, and this is a condition of mind to be avoided, as the closest cooperation from the patient is desirable. Furthermore in most cases the prolonged illness, especially if the patient is the bread winner of the family, develops into a heavy financial burden, and any procedure which can shorten the treatment seems desirable. Ligation too, done in a manner with all due consideration of the frailty of the subject, is a comparatively safe procedure even in quite toxic patients.

The proof of the value of ligations in these very sick patients can be found: (1) in the marked clinical improvement following the operation, and (2) in the microscopic findings of the thyroid tissue removed at the subsequent thyroidectomy. In this series of ligations all except one patient improved definitely following ligation, a few only moderately, but the large majority improved a great deal, nervousness being less marked, pulse rate lower, weight increased, and a lower metabolic rate. The average weight increase, in from two to three and a half months following ligation was 18.6 pounds, the highest being 44 pounds, the lowest none. The metabolic rate showed an average decrease of 22%, the greatest decrease 40%, the least none. The average fall in pulse rate was 27, the greatest fall 70, and the lowest none. In general I think these figures represent fairly closely the improvement noticed in the groups of cases mentioned.

The pathologist's report on the tissue removed following thyroidectomy in cases which had been previously ligated, also gave valuable information. In nearly all the cases the report states that the tissue was typical of Graves' disease, but showed the epithelium in a condition of retrogression, there being definite evidence of atrophy of what had apparently been active tissue. As an example of what I refer to, I will read *verbatim et literatim* a copy of the pathologist's report on the thyroid tissue removed at operation from Mrs. R—, August 7, 1922. I had ligated both superior thyroid

arteries on this patient three months previously, with very satisfactory improvement following.

Tissue report:—"This gland has evidently passed through a stage of active hyperplasia, but is now in a stage of retrogression. In a few isolated areas all the signs of hyperplasia are present, but throughout most of the gland the acini are filled with colloid projections."—Signed, W. Boyd. (Pathologist).

Giordano and Caylor¹ in a review of the histology of the thyroids removed subsequently to preliminary ligation in a large number of cases of Graves' disease, showed very similar findings to those above quoted. The cause of the arrested activity of the thyroid tissue in ligation of the superior thyroid arteries near the gland, or at its upper poles is probably due as much or more to the cutting off of sympathetic nerve supply, as to the arrest of blood supply. Mastin² has shown the rich vascular anastomosis existing throughout the whole gland, not only in one lobe, but between the two lobes, and to some extent with adjacent structures.

Following ligation and two or three months' rest, the patient is usually in physical condition to have the whole gland resected, or at least one lobe at a time resected. If only one lobe is removed, the oblique incision along the anterior border of the sterno-mastoid muscle is used and the ribbon muscles split, readily exposing the lobe. The advantages of this route are, (1) accessibility; (2) less traumatizing of tissue; (3) comparatively bloodless field; (4) less raw surface exposed for absorption of gland extracts; (5) it does not add to technical difficulties at the second operation, should resection of the other lobe be carried out later. When both lobes are resected at one sitting the usual collar incision of Kocher is used.

The chief causes of failure in the surgical treatment of this disease are well worth some attention.

(1) Incorrect diagnosis is sometimes made, the commonest error being that of autonomic imbalance. The safest guide in avoiding this error is the basal metabolism, which is normal in this condition.

(2) The resistance of the operative risk is commonly overestimated, with disastrous results. It must ever be remembered that a patient acutely ill with exophthalmic goitre has a low reserve of vitality, and the slightest

trauma, mental or physical, causes a reaction much out of proportion to the exciting cause. With this fact in view, I have endeavoured to develop a plan of technique, which will carry with it a minimum of psychic as well as of physical trauma, and in each case the operative procedure is chosen to fit the individual case. The operation chosen should as far as possible be done when the patient is improving, lest the mistake be made of operating on the crest of a wave of exacerbation of the disease.

(3) During the operation it is important to avoid entirely uncovering the trachea, or injuring its structures. This will prevent troublesome tracheitis, from which it is only a step to a serious or fatal pneumonia.

(4) Bleeding should always be stopped before closure of the wound. Time is never saved by neglecting this, because even though the patient be quite sick, the short extra time necessary to secure haemostasis does the patient much less harm than an unreasonable, perhaps unjustifiable loss of blood following operation.

(5) If the patient is in questionable condition when the gland has been removed, the wound may be left open and packed with gauze, after the method of Crile. This shortens the time of operation, and permits free drainage of toxic gland extracts. The wound should then be closed a day or so later.

(6) The postoperative storm comes on usually eighteen to thirty hours following operation. The restlessness should be combated by morphine or heroin, and a rising temperature above 100° F. met by refrigeration in the form of ice-bags. It is important to keep the temperature down, since every degree increase in temperature causes an increase of approximately 7.2% in metabolic rate.

(7) The administration of water is very necessary, and when vomiting occurs should be given by rectum, beneath the skin, and sometimes directly into the circulation in the form of normal saline. It is important as a preoperative measure to keep the fluid content of the tissues as high as possible, and for this reason the use of drastic purgatives before operation should not be permitted. With gas oxygen analgesia used in all but one of the series, vomiting occurred in all cases except one.

(8) During operation it is important to remove sufficient gland tissue. Failure to observe

this rule will contribute to the tendency of incomplete cure, or a recurrence at a later date. One of my cases had been treated elsewhere, and several operative measures carried out, and a good result obtained during the six months following the last operation. She soon relapsed, and when I saw her she was definitely a case of moderate exophthalmic goitre, with a visible and palpable enlargement of left thyroid lobe. This was resected, showing characteristic microscopic hyperplasia and hypertrophy. In three months' time she was carrying on her usual duties in a farmhouse, and according to a letter, feeling perfectly well.

(9) The morbidity sometimes still existing after completion of treatment I believe can best be overcome by operation as early in the disease as possible. Early operation conduces to complete cure, and the longer the thyroid intoxication is permitted to exist, just so much more damage to the heart, vessel walls, and sympathetic nervous system will result, so that in the late cases even although the gland tissue is resected and hyperthyroidism arrested, there remains a permanent disability from decompensation of the cardio-vascular and sympathetic nervous systems. It is therefore necessary in all cases of thyroidectomy to follow and advise the patient for six to twelve months, in order to develop as fully as possible repair and compensation of these two important systems.

Follow-up reports on this series show the results of treatment to be very favourable. In the cases operated on within the last six months the immediate result is good, but it is too soon to give a definite opinion on the final result. In the cases operated on previous to six months ago an effort was made to ascertain their condition during the last month. In all cases except three the patients are carrying on at their usual vocation and feeling very well. Of the three less improved, two still experience symptoms of the old disease, are easily excited and easily tired, but they find themselves much better than before operation, and carrying on to a degree at least their household duties, both being housewives. The third case is apparently only slightly improved and must be considered (for at least ten months after operation) a failure. It is worth mentioning that this case had been sick for several years with symp-

toms very characteristic of prolonged thyroid intoxication, including enlarged thyroid gland. She was referred to me by her physician as a case of Graves' disease, and careful examination seemed to bear this out, with the exception of her basal metabolism, which was only plus ten per cent. (normal). This was the only case of the series with a normal basal metabolism, but I operated believing that the thyroid was the primary cause, and that a condition of dysthyroidism existed. The result of operation has not justified the treatment, and I now believe this case to have been one of autonomic imbalance of unknown origin.

In this series were three cases of severe præcordial pain which came on in spasms causing the patients to cry out with pain, and for which morphia was required. None of these cases were the severely toxic type, and all had thyroidectomy done with the complete relief of this pain, which no doubt was myocardial in origin.

In this series of 51 thyroidectomies one death occurred, a mortality of 1.9%. This death was from postoperative hyperthyroidism in a young woman little improved following ligation. In 19 ligations of both superior thyroid arteries one death occurred, a mortality of 5.2%, four of these cases are not yet thyroidectomized. This death occurred in an old man of 68 years, acutely sick for eight months, having lost 70 pounds in weight, and a mere wreck and steadily growing worse. It is to be noted that all cases of exophthalmic goitre met with, no matter how advanced, were handled in this series.

In conclusion I wish to thank those who have been so good as to cooperate most heartily with me in handling these very difficult cases; in particular Dr. David Aikenhead for his full co-operation in the question of anaesthesia, and Dr. William Boyd for his painstaking reports on thyroid tissue; in general, too, all members of the hospital staffs, who so kindly endeavoured to carry out methods of treatment often so foreign to the usual hospital care, and without which the same degree of progress could not have been made.

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STERILITY IN THE MALE*

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THE question of the responsibility for sterility in marriage is a most difficult one to estimate. It would seem that the woman has most generally been blamed for the sterile issue of a marriage and less attention has been directed towards the man; perhaps because the woman is more influenced by desire for parenthood, though this desire varies with the station in life of the married couple. Accurate statistics are impossible to obtain because in few cases is it practicable to obtain a full history and complete examination of both partners. Moreover, some marriages are sterile, whereas each individual with a different partner may have successful issue.

A careful distinction must be drawn between impotence, *impotentia coeundi*, and sterility, *impotentia generandi*. While the latter necessarily exists in the presence of the former, the reverse is not the case. Sterility in the male, to which we are limiting our attention is that condition where there is an absence of procreative power and does not imply the lack of power to have sexual congress. It implies the absence of living, functioning spermatozoa, or the inability of these to be placed in the proper location, since these are the male elements essential in impregnation. The causes of sterility in man may be divided into two groups.

1. Where a normal coitus is not followed by a seminal ejaculation, *i.e.*, aspermia.

2. Where the semen is deficient in procreative power, either from a diminished quantity, or poor quality, or even the absence of spermatozoa, *i.e.*, oligospermia, necrospermia and azospermia.

I.—True aspermia is absolute or relative.

(A) Absolute aspermia may be either congenital or acquired, and is always due to an

organic lesion in the genital tract. The main congenital cause is atresia of the ejaculatory ducts, lesions either in or about these ducts, or in the seminal vesicles, or lesions in the prostate gland, through which the ducts run. Acquired lesions may be due to disease, injury, traumatic or operative. Gonorrhoea may cause inflammatory stricture of the ducts or vesicles, with resulting closure or narrowing, or formation of stones and concretions. Lesions of the prostate, adenomatous or cancerous enlargement, abscess, fibrosis, calculus, tuberculosis, trauma, and operation may also cause obstruction of the ducts. The operation of prostatectomy is stated by Thomson-Walker to result in aspermia in 32.5% of cases.¹ In all these conditions the semen cannot get into the urethra, and the only evidence of ejaculation will be the modest secretions from the accessory sexual glands of the urethra.

One must distinguish the condition of false aspermia or malemission, where by reason of congenital anomalies, the semen cannot be deposited in the vagina. Hypospadias, epispadias, phimosis, abnormal openings of the ejaculatory ducts are congenital forms. Acquired causes are swelling about the colliculus due to chronic gonorrhoea, urethral strictures and various forms of internal or external fistulae between the seminal vesicles or the urethra and adjacent strictures. These fistulae may be the result of organic disease or traumatic or operative injury. In these cases the semen is ejaculated elsewhere than through the meatus urethrae, or only after the act of coitus has been completed.

(B) Relative or temporary aspermia implies ejaculation only at certain times or under certain circumstances. This form of aspermia may be divided into three groups.

1.—The atonic form, where there is a lack of excitability of the centre for ejaculation in

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the lumbar cord, or imperfect co-ordination of the muscles of ejaculation, either congenital or acquired. Venereal excesses and masturbations are the most important factors in bringing about the condition of exhaustion of the centre for ejaculation. This variety has been styled by some authors exhaustion aspermia.

2.—Anaesthetic aspermia, where the sensibility of the penile skin is disturbed, as a result of which reflex action of the peripheral nerves on the ejaculation centre is impossible. Massive scar formation on the penis will bring about this result.

3.—Psychic aspermia. In this form, various influences of a psychic character can irritate the inhibitory centre in the brain so powerfully, as to suppress the working of the ejaculatory centre in the cord.

II.—Azoospermia, oligospermia, necrospermia. In this group, the following conditions will be found to exist:—

(a) Either the sexual organs which produce the spermatozoa are absent, or are diseased to a point where function is lacking, or,

(b) the semen through some disease of the seminal passages, which reduces the vitality of the spermatozoa, is rendered sterile.

(c) Normal semen is hindered in its exit.

(d) General conditions exist, which decrease the number of spermatozoa, or lower their vitality.

A.—Lesions of the testicle. With bilateral anorchism, sterility naturally follows. The cryptorchid, however, is not necessarily sterile, and then only when pathological changes, the result of abnormal position, result. The testes in these cases are often undeveloped, or fibrosed or atrophied. Diseases of the testicles, according to their degree and extent tend to destroy or lessen the fertility of the spermatozoa. Either azoospermia or oligospermia follows. The process which most frequently affects the testicle is atrophy. This may be from lack of development, which the testicle may share with other sexual organs. More important are the atrophies which result from definite lesions, such as inflammation of testicular tissues or continued pressure. Among the inflammations, gonorrhoea, though more frequently affecting the epididymis, may occasionally cause orchitis. The metastatic orchitis of mumps is an important cause.

Traumatism frequently result in atrophy. Long continued pressure from large hydroceles, scrotal herniae and varicoceles is also a factor. Syphilitic, tuberculous and carcinomatous lesions naturally cause loss of testicular function, though in the case of syphilitic orchitis the improvement under anti-luetic treatment is remarkable.

B.—Lesions of the epididymis. When the epididymes are absent, naturally the spermatozoa cannot be conveyed to the lower genital tract. Among inflammatory conditions of the epididymis, we have one of the most frequent causes of all sterilities, the gonorrhoeal epididymitis. Traumatic, syphilitic, tuberculous, and malignant changes in the epididymis play a much less important rôle. Their effect is in the closure or obstruction of the seminal ducts. Whether these channels remain open or not depends upon the degree and duration of the inflammatory process. Not all bilateral epididymitides are followed by sterility. Casper² quotes Liegois as finding spermatozoa in only 8 of 83 cases of bilateral epididymitis. Guiteras³ states that in 65% of cases with bilateral epididymitis, sterility results. One-sided epididymitis does not necessarily reduce procreative power, provided the other organ is sound and no other conditions causing sterility exist.

C.—Certain diseases of the seminal passages affect the vitality of the spermatozoa. When any portion of the seminal tract is inflamed, the products of inflammation, pus and blood may mix with the semen and result in pyospermia or haemospermia. This may happen in epididymitis, vas deferentitis, prostatovesiculitis and in urethritis. Pus and blood mixed with semen do not in all cases exercise a deleterious effect upon the spermatozoa, though they may reduce their vitality, or even completely destroy them.

D.—Alterations in the general condition of an individual can influence the secretory activity of the testicle. This is shown by the physiological or temporary azoospermia, which follows too frequent ejaculations. The oftener these occur in a given time the less will be the quantity and consistency of the semen, and content in spermatozoa, till finally the secretion consists merely of that from the accessory genital glands. An exaggerated form of this

variety of azoospermia, which is comparable to exhaustion aspermia, occurs in sexual neurasthenics, who have indulged to excess, either in masturbation or in ordinary coitus. The alteration in the spermatozoa obtained from these cases, manifests itself in their slow movement and early death. Generalized syphilis, morphinism and wasting diseases may result in azoospermia. Prolonged exposure of the testes to x-rays produces an oligonecrospermia or true azoospermia.⁴

The diagnosis of azoospermia offers no difficulty. One examines under the microscope a drop of semen. The healthy spermatozoon will live for twenty-four hours if evaporation is prevented. The examination should, however, be made within an hour, if possible, this period being ordinarily quite practicable. The absence of spermatozoa, their diminution in quantity, their lifelessness, and particularly the early formation of sperm crystals, the so-called Botcher's crystals, indicate that one has to deal with an azoospermia, oligospermia or necrospermia. The early deposit of Botcher's crystals is an indication of unhealthiness of the spermatozoa. Healthy semen does not deposit these crystals for two or three days, provided evaporation and drying are prevented.

It will be seen from the above academic considerations that the causes which produce sterility in man are many, and that the determination of the procreative function of any individual necessitates a most thorough examination of his previous history, his sexual habits and powers, a careful physical examination of all organs concerned in the formation and conveyance of spermatozoa and microscopical examination of the products of freshly obtained ejaculations. Particular attention must be paid to the question of chronic gonorrhoeal infection. It is imperative that the physician shall make a thorough examination of the urethra and its glandular apparatus and of the prostate and seminal vesicles, with microscopical and bacteriological investigation of their expressed secretion.

In the absence of permanent functional changes, incapable of restoration, the prognosis will naturally depend upon the possibility of removing the cause of the sterility. The treatment, which will be appropriate to the con-

dition found is beyond the scope of this paper.

It has been pointed out how difficult it is to arrive at a decision in fixing responsibility for childless marriages. White and Martin⁴ state that "The percentage of sterile husbands in childless marriages has been variously calculated at from 5 to 20." These figures would appear to us to be low, particularly if we take into account the cases of female sterility for which the husband is directly responsible.

In order to arrive at a personal conclusion, we have culled from our records a small series of cases, most of whom had been referred by gynaecologists, the larger number by Dr. H. M. Little. The cases studied were husbands whose wives had insisted upon having the responsibility for lack of children definitely fixed. Too often in the past, where the husband was at fault, normal women have been subjected to abdominal operations, dilatation of the cervix, curettage, etc. In such cases operations are useless, and where a latent gonorrhoea, contracted from the husband is present, really dangerous. Commonly, only the irritation of operation is necessary to light up a conflagration which only too often has led to closure of the Fallopian tubes, permanent sterility, chronic invalidism or worse.

The series consists of 53 men. In not all of them has it been possible to carry out a complete physical examination, for various reasons; in many of the uncompleted cases, because the husband was not anxious to delve too deeply into the question. The cases have been analyzed from different points of view; first, as to their premarital history; second as to the conditions found on physical examination and thirdly, the seminal function.

Table I. indicates the premarital history,—

TABLE I.

Premarital History

Gonorrhoea.....	26	(1 with bilateral vasotomy)
Epididymitis.....	7	(1 bilateral)
Syphilis.....	6	(4 with gonorrhoea)
Masturbation to excess	1	
Negative.....	24	

It will be noted that gonorrhoea had been present in 26 of the 53 cases, or 49%, though epididymitis was only admitted in 7 cases, in only one of which was it bilateral.

Table II. shows the condition found on physical examination,—

TABLE II.

<i>Lesions found on physical examination</i>	
Atrophy of testes, unilateral, with varicocele	2
" " " bilateral	3
" " " bilateral, with loss of secondary sexual characteristics and lack of desire	1
" " " bilateral, with varicocele	1
" " " bilateral, with chronic epididymitis	1
Prostato-vesiculitis, chronic	19
" " " with acquired stricture urethra	1
" " " with varicocele	1
" " " with hypospadias	1
Stricture, urethra, congenital	1
" " " " with hypospadias	1
Lack of sexual desire	2
" " " " with varicocele	1
Negative	16
Not examined	2

Note the high percentage (43%) of uncured gonorrhoeal infections. If we assume that all the cases of prostato-vesiculitis were of that nature, which is most likely, in only 3 of the 22 cases, was there any doubt as to the etiology.

Table III. shows the results of the examination of the semen made as soon after ejaculation as possible. In only 66% of the cases was this done, the remainder having definite evidences of disease, or shirking the test,—

TABLE III.

<i>Examination of seminal fluid, 32 cases</i>		<i>Pyospermia Haemospermia Rottcher's Crystals.</i>		
Aspermia	1	1	..	..
Azoospermia	11	..	1	4
Oligospermia	4	..	..	3
Necrospermia	3	..	..	1
Oligonecrospermia	4	1	..	..
Healthy	9	..	..	..
Not examined	21	..	..	..

It will be noted that in only 28.1% of the cases in which semen was examined were the spermatozoa apparently healthy. Studying the physical condition of those with healthy spermatozoa, (Table IV.), only 5 of the 9 were normal,—

TABLE IV.

<i>Cases showing healthy spermatozoa, 9</i>	
Prostato-vesiculitis, chronic	2
" " " " with varicocele	1
Lack of desire	1
Normal	5

A study of the cases whose semen was not examined, was still more convincing. This is shown in Table V., by which it will be seen that only 4 out of the 21 were normal,—

TABLE V.

<i>Cases whose semen was not examined, 21</i>	
Prostato-vesiculitis, chronic	14
" " " " with stricture urethra ..	1
Wife infected with gonorrhoea	1
Syphilis, latent	1
Normal	4

It has not been found possible to obtain complete information as to the condition of the wives in all cases, though several were found to be suffering from minor gynaecological defects and one, whose husband was examined and found healthy, had a congenital anomaly, which was successfully relieved by operation. In two men, apparently normal, one with a history of gonorrhoea, the other denying this, the wives had infected and sealed tubes. In another case, the prostatic infection in the husband was presumably acquired after marriage, his wife having been previously married. Two women were stated to have had children by former husbands.

Fifty-one of the cases were studied intensively enough to adjudicate guilt. Of these, in only five could the responsibility for the sterility be attributed to the wife. In one case, responsibility was divided and doubtful. In 45 cases, or 88.2%, the husband was to blame for the unsuccessful issue of the marriage. In 16 cases (31.3%) the cause was developmental, and in 29 (56.9%) it was due to misconduct. The high percentage of cases giving a history of gonorrhoea, 49%, and showing evidences of uncured residual infection, 43.1%, is again pointed out. In practically all of these cases, marriage was contracted by the husband in the belief that all traces of infection had been eradicated. The above study warrants us to strongly emphasize the important rôle played by the prostate gland, in harbouring gonorrhoeal or post-gonorrhoeal infection. No patient who is being treated for gonorrhoea should be discharged as cured, or consent for marriage given, until the certainty of the absence of any infection in the prostate is definitely established. In cases where traces of infection in the husband remain, the possibility of latent infection in the wife has to be kept in mind. Injudicious operations, where this latency of infection exists may light up infection, which may lead to permanently damaging results. Many men with chronic infection in the prostate have several children without their wives showing traces of infection. This does not lessen the dangers of such infection and the possibility of sterility resulting. Our statistics show, that of the 22 cases with prostato-vesiculitis, 11 had their semen examined and only 3 showed healthy spermatozoa. Of the

cases where a history of gonorrhoea was obtained, 12 had their semen examined. Only 2 of these showed healthy spermatozoa.

It is perhaps unwarranted to draw too definite conclusions from this small number of cases. The study does not take into consideration the sterility produced in the female by gonorrhoea and syphilis. It possesses the virtue, however, of being compiled from individuals in whom the sterility was the cause for special investigation. Two conclusions stand out prominently.

1.—The importance of examining thoroughly

both husband and wife before responsibility for sterility is definitely fixed, and before carrying out any operative procedure on the woman.

2.—The large percentage of cases in which cured or uncured gonorrhoeal infection is responsible for male sterility.

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- (2) CASPER, *Urology*, Berlin, 1910, p. 559.
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- (4) WHITE AND MARTIN, *Genito-Urinary Surgery*, Philadelphia, 1918, p. 452.

X-RAY TREATMENT OF PERTUSSIS

R. R. STRUTHERS, M.D.

Montreal

THERE have been during the past winter in

Montreal a large number of cases of pertussis, but nearly all of a mild type in comparison with that usually met with in this city. However, the lack of uniformity of results of treatment has been striking. Having heard in a roundabout fashion of the use of x-ray in the therapy of whooping-cough with good results, in February last at Dr. Williamson's suggestion we treated an infant with whooping-cough by x-ray. The results were so encouraging that the mother and maid in the family were also treated by exposure to the rays. Since then we have treated the cases which are the substance of this report.

I am told that an article on this subject appeared in 1912, but we have been unable to find it in the available literature. In the *Boston Medical and Surgical Journal* of March this year, Doctors Bowditch and Leonard reported a series of twenty-six cases which they had treated by x-ray with very encouraging results. Their method of treatment consisted of two or three exposures of the chest to the rays on alternate days—the whole dose given being well below the "erythema dose." They noted a number of "prompt cures" by this treatment and relief from the severe and

numerous spasms in seventy per cent. of their cases.

I have pleasure in presenting to you a series of forty-five cases which have been treated at the Montreal General and Children's Memorial Hospitals during the past three months. Their ages vary from three months to thirty years, and the duration of the disease from the second day of the spasmodic manifestations to the eighth week. Our method differed somewhat from that reported from Boston. Our first cases were treated by a similar method—that is, short exposures, sufficient to over-expose a flat plate of the chest, every other day for two or three treatments. The great bulk of the cases, however, were treated by a large single exposure—suggested by Dr. Wilkins of the Montreal General Hospital. All the cases had definite clinical pertussis excepting one, of whom I shall speak later. All have been followed for at least two weeks, either by personal visits at home or by clinic. Only seven or eight of the series received any other medication, either by vaccine or orally, within a week after the treatment.

Of these forty-eight cases, seven, or fifteen per cent., can be classed as "prompt cures," that is, the whooping and vomiting entirely

ceased within forty-eight hours, usually within twenty-four, and did not return. A slight cough in the morning—not of a spasmodic character—persisted for about two weeks in about one-half of these. The effect was striking. One mother had been getting up from twelve to sixteen times each night for four or five days to care for the two children during the spasms. Following the large dose of rays, that same night the children neither whooped nor vomited; they did not even cough and remained completely free. The gratitude of the mother was somewhat overwhelming.

Twenty cases, or forty-five per cent., we characterized as "relieved," that is, within four or five days showed considerable amelioration of symptoms; there were less frequent and less severe spasms and cessation of vomiting, and we felt the improved condition could be traced directly to the treatment and was not due to the natural course of the illness.

Eighteen cases, or forty per cent., showed no appreciable change in their condition, though we do think that in some of these the duration of the disease was definitely shortened. However, the majority we have been unable to follow to the termination of the disease to ascertain this point, though two cases treated during the first week of the paroxysmal stage, who showed no improvement during the first four days of treatment had apparently completely recovered two weeks later, with no other treatment than a little expectorant mixture.

Although we appreciate that our series is too small and too incompletely worked out to draw definite conclusions of scientific value, there are two or three points that we would emphasize.

Firstly.—That the larger the dose of the ray given the greater apparently is the improvement. All our prompt cures except one received the larger dosage.

Secondly.—The earlier in the paroxysmal stage the treatment is given the greater is the probability of relief.

In very few of our cases treated after the third week of the paroxysms was any improvement noted.

We had the opportunity of treating one case in the catarrhal stage of the disease. Another child in the family had been whooping for one week when brought for treatment—the younger child had coughed, according to the mother, for two days. Both were treated, and the younger child progressed through a very mild but typical attack, the duration of the disease being only three weeks in all.

One child died of bronchopneumonia five days after the radiation, and one is still in a precarious condition with bronchopneumonia, which was present before treatment. Two cases that we had considered greatly relieved relapsed, the onset of a fresh upper respiratory infection reinduced the symptoms of pertussis from which they had been practically free for some days.

Regarding the rationale of the treatment I must confess we are still in the dark. Whether the good results are due to the bactericidal action of the x-rays, with a cessation of absorption of a toxin which acts on the central nervous system producing spasm of the larynx and bronchi, and vomiting, or whether it is purely a relief of the spasmodic condition itself, similar to that which is seen in so-called thymus cases, we are unable to state. From our results, however, we do feel that x-ray radiation in full doses has a definite place in the therapeutics of this most distressing disease of childhood. I know of no other method of treatment which gives equally good results. As Dr. Bowditch puts it in his paper, "We have a feeling that the x-ray at the present time may be of more value in the treatment of pertussis than any other form of treatment including serum." However, further work in an institution where careful observation and bactericidal work can be made, is required.

In conclusion I wish to thank Dr. Chandler, chief of the service at the Montreal General Hospital, for permission to include several cases treated under his direction. Dr. Wilkins, radiologist to the General Hospital for his suggestions and help, and also Dr. Williamson of the Children's Memorial Hospital where the first cases were treated.

Case Reports

Abstracted from the Bulletins of the Harvey Club, London, Ontario

TOXAEMIA OF PREGNANCY (HEPATIC TYPE)

J. B. MANN, M.D.

Mrs. H. D., age 27; 7½ months pregnant. Temporary glycosuria had been noticed on April 10th, but with moderate restriction of carbohydrates. There was no sugar in the sample submitted April 13, nor was there any albumin.

During night of April 15th, she began vomiting. This was accompanied by intense nausea and continued throughout the next day. Nothing was taken by mouth but yet she vomited over two quarts in the eight hours previous to 7 p.m. April 16th. She had no headache at any time; temperature 98 2/5°; pulse 84; blood pressure 115/80; colour good; no dilatation or softening of cervix. Frequent and severe pains were felt over the whole abdomen. Morphia was administered and she was sent to the hospital, and there was given glucose by rectum and gastric sedatives, but the vomiting continued, and became distinctly faecal in odour and appearance. At 5 a.m. she became cyanotic and pulseless, and died at 6.30 a.m. on April 17th.

It is of interest that there was no headache, no hypertension and no albuminuria. It manifested itself solely through the gastrointestinal tract. Prof. B. P. Watson called it "Hepatic type of toxæmia." Autopsy showed only fatty degeneration of the liver.

CYSTICERCUS OF TAENIA SOLIUM IN HUMAN BRAIN

F. W. LUNNEY, M.D.

The cysticercus stage of taenia solium (the pork tape worm) in man is quite rare. The following case is of interest because of the clinical symptoms which suggested nervous syphilis.

History.—E. C., male, Belgian, age 66; emigrated to the United States in 1911. There he

worked as a labourer in different factories in Detroit. After his second marriage he acquired a genital sore but there was no subsequent history of secondary syphilis. Since 1921 has had occasional spells of unconsciousness but did not bite tongue and there was no aura. On June 30, 1922, he had an attack which lasted nearly three days.

Mental Examination.—Some illusions and hallucinations were noticed and he complained of electrical sensations in feet and hands (wires tied around his leg, etc.)

Neurological Examination.—Ataxic; marked Rombergism; knee jerks greatly diminished; pupils sluggish to light and accommodation; paraesthesia of hands and feet; grip of right hand very weak.

Serology.—Blood and spinal fluid normal. On March 11, 1923, he had two epileptiform seizures, with frothing at mouth and diffuse clonic convulsive movements, most pronounced on left side. He died on March 20, 1923.

Autopsy.—All organs with the exception of the brain appeared normal. Brain showed one cyst lying superficially beneath the arachnoid on the under surface of right frontal lobe; flattened out; elongated, and in apposition with optic nerves and right olfactory nerve. Three other cysts were found in the subarachnoid space, deep in the sulci on the upper surface of the right cerebral hemisphere in front of the fissure of Rolando. A fourth cyst occurred in the same region on the left side of the brain. The cysts contained larvae of taenia solium.

A CASE OF THE ADULT TYPE OF TUBERCULOSIS IN CHILDHOOD, COMPLICATED BY TUBERCULOUS BRONCHOPNEUMONIA

F. H. PRATTEN, M.D.

Indian female, age 11, was admitted to sanatorium, July 7th, 1923, with a history of having recently had pertussis and influenza.

Examination showed impaired resonance over the right upper lobe anteriorly and posteriorly, with apical cavitation and moisture. X-ray showed right scoliosis, consolidation, and pleural thickening throughout *right* upper lobe. *Left lung* showed light scattered tuberculous disease to 4th rib. Fever varied between 98.6° and 101.6°; the pulse from 100 to 120. Practically there was no cough and almost no sputum; one specimen obtained was negative; Wassermann was negative; T.B. complement-fixation was positive. She improved symptomatically. Fever slowly subsided to 99° and by Sept 11 she had gained 20 lbs.; occasional pain was complained of in the right chest. On Sept. 26th the temperature shot up to 102°, and the following day to 104°. Impaired resonance over both bases posteriorly. The temperature remained up twelve days falling by lysis to 99°. Consolidation resolved leaving moist râles. The left practically cleared leaving the right still moist; dullness marked.

The adult type of tuberculosis is rarely seen in childhood and has a high mortality rate. The prognosis is especially bad in the Indian race.

A CASE OF ERYTHRO-MELALGIA

J. I. FERGUSON, M.D., F.A.C.S.

Mrs. S.; her family history was negative. The *onset* of this trouble occurred on Christmas Day, 1922, when she suffered from a series of chills and had to keep her bed for three weeks owing to an attack resembling influenza. Afterwards, on attempting to resume her duties she complained of being easily tired and excitable, and on slight exertion became short of breath. Two months later intermittent pains occurred in the right finger tips, pains which later became more continuous and interfered with sleep.

On examination, patient is of medium height; her weight 145 lbs.; no psychosis. The muscles of the right arm twitch and her fingers are stiff. Their tips are engorged, somewhat reddish in colour with cyanotic hue, and hot. The

skin over the hypothenar and partly over the thenar eminence is bluish in colour. Pressure removes this colour, but all pressure gives pain. There are no eye symptoms; the vessels in the right fundus are normal, the disc margin is plainly visible showing no evidence of increased intracranial pressure; the veins of the left fundus show a slight engorgement. Headache in the right parietal region has been complained of for several months. A slight tremor of the tongue and lips is noticeable, but no atrophy. Movement of the right facial muscles is somewhat stronger than of those on the left side. Biceps and triceps reflexes are present; also knee jerks and Achilles jerks. Romberg's sign is not present. The heart is normal in size, regular in rhythm and there are no murmurs. There is no pathological condition discernible in the lungs. Blood pressure varies between systolic 160, diastolic 80, and systolic 120, diastolic 78. Analysis of the urine gives negative results. Examination of the blood: Wassermann is negative; haemoglobin 90%; red cells 4,140,000, white cells 5,400. An x-ray examination of the cervical region showed nothing abnormal.

Diagnosis.—A vasomotor neurosis, probably erythro-melalgia, of unknown etiology.

Treatment advised.—Rest as much as possible, and avoidance of all excitement and worry; warm continuous baths for half an hour before retiring, to secure muscular relaxation; some sedatives were given. Up to the time of writing there is not much change in her condition. If no improvement sets in further radical treatment should be considered, such as operative interference consisting of exposing the brachial artery and stripping the topmost coat from the vessel for about an inch; in this way the vasomotor supply is eliminated and sometimes excellent results are obtained. Clark, in the *Journal of Tropical Medicine and Hygiene*, for September 15th, 1923, reports cures in cases of erythro-melalgia by the injection intramuscularly of 1 grain of antimony tartrate in 20 minims of water, weekly. From one to six injections may be given.

Editorial

THE SOCIETY OF FRIENDS OF MEDICAL PROGRESS

THERE is before us a twelve page booklet issued by the above named Society. We would fain abstract the contents for our readers but find the task difficult because the whole of the matter is so well worth reading. The Society was founded in 1923, with headquarters in Boston, Massachusetts, and its objects are set forth as follows:—"A National Lay Society, organized and incorporated, (1) To encourage and aid all research and humane experimentation for the advancement of Medical Science; (2) To inform the public of the truth concerning the value of scientific medicine to humanity and to animals; (3) To resist the efforts of the ignorant or fanatical persons or societies constantly urging legislation dangerous to the health and well-being of the American people."

The Honorary and Active officers include Dr. Chas. W. Eliot, President Emeritus Harvard University; Dr. James R. Angell, President Yale University; Hon. Chas. E. Hughes of Washington; Bishop Mann, Pittsburgh; Cardinal O'Connell, Archbishop of Boston; Dr. Ellen F. Pendleton, President Wellesley College; Ernest Thompson Seton, famous author of animal books; Thomas Barbour, Agassiz Museum, Harvard; Edward Wiglesworth, Boston Museum of Natural History. The Field Secretary is Mr. Ernest Harold Baynes of Meriden, N.H.

The text of the booklet details fully the reasons for its organization and appeals for the support of a large membership:—"If you owe gratitude to any doctor here is a chance to pay your debt." In fearless language the anti-vivisection, anti-vaccination and "med-

ical liberty" organizations are arraigned and challenged, and it is the purpose of the "Friends" to disseminate the truth and the facts, and so educate the public that "honest" people will no longer be misled by the propaganda of the enemies to medical science and will withdraw their support. The magazine *Life* which stood behind them for so many years, has found them out and will have nothing further to do with them. And Ernest Thompson Seton, the last scientific man in their ranks, resigned two years ago and told them why he did so. "No honest person can retain membership in one of these societies after learning the facts—"

Citing the recent efforts on the part of these people to obtain legislation providing for the total abolition of animal experimentation, and the effect a local success would have on the country at large, the "Friends" make the plea that the problem of combating these attempts is a national one and should not be left to the unselfish sacrifice of the few.

The Treasurer of the Society is Miss Mary Lee Thurman, 28 Newbury Street, Boston, and we would urge our members to send for a copy of the booklet so that by reading it they may obtain inspiration and encouragement to "carry on" in these times of cults and "isms."

A parallel but individual protest has come to our attention from a Canadian. In a letter to the Executive of our Association, a resident of Ottawa calls for action on the part of the Association to take issue with a newspaper of that city in whose columns repeatedly appear attacks against the medical profession.

To what can we ascribe such active interest in our behalf? Is it in order to assure to the medical profession a monopoly of the business of healing? Emphatically—No.

These "Friends" are broadly educated. From the records of history and of the present times they appreciate to the fullest degree that the health and well-being of the world depends upon the progress of "Scientific Medicine;" that the elimination of some plagues and the control of others and the hope of control of still others are due only to the methods of study and experimentation adopted by Scientific Medicine; and that these studies must not be hampered or discontinued by the acts of well-meaning fanatics, unscrupulous schemers or the unthinking dupes of either.

The line of action of the profession is thus clearly indicated. Let us each and everyone do our full duty in the prevention and treatment of disease. Let us from time to time reconsecrate our-

selves according to the spirit of the Hippocratic Oath, the simplest and best code of ethics yet formulated. By unselfish devotion to the common weal, while not necessarily forgetting that the labourer is worthy of his just and proper hire, we shall make "Friends" and allies of all thinking people. They will fight our battles and to much better effect than can we. When we array ourselves against the forces of evil, our efforts are so liable to misinterpretation, and to be looked upon as a "powerful union" fighting to maintain a "monopoly." Thus we lose. In addition to the careful performance of our daily duty, education is our one effective weapon. In season and out the public must be instructed by precept and by example along the paths of health. The Executive of our Association hopes shortly to announce a plan whereby under the name of the Association there will issue in the press throughout Canada a continuous series of articles dealing with matters of public health.

RECENT RESEARCHES ON CANCER

ARE we approaching a clearer knowledge of the secret of cancer? An affirmative reply may be given to this question, but our progress is slow notwithstanding the concentration of effort upon its solution. The great incentive to research work is the high death-rate from cancer that obtains in all parts of the world; a death-rate that there is reason to believe is becoming higher with each decade. In England and Wales, 45,328 persons died from cancer in the year 1921; during that year one in every seven deaths from the age of thirty onwards was caused by cancer.

When Yamagiwa and Ichikawa produced cancer in the ears of rabbits by protracted painting with tar they con-

firmed the observation of many physicians and surgeons that prolonged mild irritation may produce cancer. Clinically it has not been noticed that cancer was particularly likely to follow severe injury; yet experimental work seems to have demonstrated that an injury followed by a persistent mild irritation of the part injured may result in a more than usually rapid growth of cancer. Unfortunately the removal of the irritation is not followed by the disappearance of the cancer or an arrest of the growth. Drew, has shown that even cold extracts made from cancer tissues, have a stimulating property; also that an extract of slightly autolyzed normal tissue added to a culture of normal cells increases also the speed of

growth. Research work up to the present has been directed very largely to the cancer cell, its origin and natural history. Less attention has been given to the host. The age incidence of cancer is one of its most definitely established characteristics. It is a disease of adult life; only occasionally is it observed in the young. It is also an interesting fact to remember that secondary cancers, other than metastases, are almost unknown. Multiple primary cancer lesions are very rare; although the writer happens to have under his care at the present moment an instance of two cancers in the same tongue apparently developing simultaneously and separated from each other by an inch and a half of normal tissue. Murray, the director of the Imperial Cancer Research of London, found that after a tar cancer has begun to grow, subsequent applications of tar at another point usually fails to produce the new focus of cancer development. Oertel, in a recent paper, has developed this thought very clearly. He points out that the cancer tumour is dependent upon the host for a vascularized stroma; in other words, for board and lodgings. The host must supply the connective tissue which carries the nutrient blood vessels and upon whose presence and co-ordinated growth the whole life and activity of the cancer depends. Remove this support, or in other words, make the organism refractory by withholding the supporting connective tissue and vascular supply, and the cancer cells are unable to grow and organize, and atrophy.

Does our modern way of living lessen our resistance to cancer? Sir Arbuthnot Lane is sure that it does, and that our increasing susceptibility is due to the injury done to tissues and organs by toxins formed in the intestines, chiefly in the colon and often secondary to

colonic stasis; emphasizing the fact universally admitted, that cancer cannot begin in a normal cell, or a normal organ. As stated in a recent number of the *British Medical Journal*, we may ultimately find that Lane has been a voice crying in the wilderness.

Dr. W. Cramer's recent investigations seem to prove beyond a doubt that the growth of malignant tumours does not depend on the presence of the accessory food factors. Tumours grow just as well in animals deprived of vitamins as in the normal controls. He shows that the "atrophy resulting from a vitamin deficient diet affects specifically certain tissues or groups of cells, and further that deficiency in one vitamin affects an entirely different group of cells. Thus, absence of vitamin B. leads to an atrophy of lymphoid tissue with a consequent lymphopenia, and absence of vitamin A. is followed by an atrophy of the intestinal mucosa; the other tissues show no corresponding primary change, some of them, indeed, for instance the adrenal, actually undergoing hypertrophy." He sees no reason to think that an abundant supply of vitamins in the food may be harmful to the patients suffering from cancer, or on the other hand, that the withholding of these could retard the progress of the growth.

It is generally admitted that in early life a resistance is offered to cancerous development. What furnishes this resistance? A research study might throw light on this great problem. This much may be said, that cancer never develops in a normal cell or organ, and that prolonged stimulation in some individuals incites malignant growth. Until we have more knowledge our safety lies in keeping fit, and ridding ourselves of conditions known to favour the development of a malignant growth.

G. E. A.

THE PROBLEM OF CARDIAC DISEASE

IN the control of any disorder the old adage of the ounce of prevention being worth the pound of cure still holds its sway. This is particularly the case in cardiac disease, in the later stages of which our remedies are so woefully inadequate. We cannot put a new myocardium into a diseased heart try we never so wisely; at best we can only spare that which still remains.

Recently there have been two excellent articles on the treatment of cardiac disorders. The first deals with the place of digitalis in cardiac therapy¹ and the second with the control of the rheumatic heart²; the latter is much the more important, dealing as it does with the prophylaxis of cardiac infection and the management of rheumatic carditis.

If we take stock of the cardiac remedies of the moment, we find that MacKenzie's "sheet anchor" digitalis still occupies the centre of the stage, and as our knowledge of its powers become more exact, our disappointments become less frequent. If we realize that digitalis exerts its greatest benefit as a cardiac sedative, as a depressant of the conducting system, be it as a result of vagus stimulation or by the production of a partial block in the A. V. bundle, we will be on the right road. Digitalis produces its most dramatic effects in fibrillation of the auricles, and here the London School would have us leave digitalis; they still lean towards the idea that digitalis regularly slows the pulse and suggest that it can have but little effect on the cardiac muscle where the rate is already slow. This of course is not borne out by Christian's observations on the decompensated heart where there is a slow regular pulse. In many of these cases digitalis gives just as outspoken diuresis and relief of

dyspnoea without any change in rate, as may be seen in cases of auricular fibrillation. A point to be emphasized is that the time for treatment is when the case is in the earlier stages and when the myocardium is still in fairly good condition.

We are deeply indebted to St. Lawrence of New York and to the Society for the Prevention and Relief of Heart Disease, for intensive studies of the earlier forms of cardiac disease, especially in children. The relation between rheumatic fever and the heart has been recognized for over 125 years. Edward Jenner of vaccination fame reported on this subject before the Gloucester Medical Society. His paper was never published, although referred to by his contemporaries, and the credit of the discovery has gone to others. Raven of Broadstairs stresses the importance of our ignorance as to the cause of the disease, and contrasts the public apathy regarding rheumatic fever with the great advances made in the treatment and prevention of tuberculosis since the discovery of Koch's bacillus. It is hard to stimulate public interest in a disease of unknown origin. While generally regarded as of non-contagious character, St. Lawrence has shown that the incidence of rheumatic fever and of tuberculosis in families exposed to these respective diseases is almost identical, an indirect but strong argument that rheumatic fever is a communicable disease. Portals of entry are also of importance, the tonsils being under particular suspicion. It is generally felt that while the removal of these organs in rheumatic fever is of benefit in the prevention of reinfection of the heart, still they play no important rôle in the incidence of the nervous manifestations of the disease, namely chorea. Chorea itself is an interesting example of the inaccessibility of infections of the nervous system to our remedial agents.

(1) SUTHERLAND, G. A., Some Uses of Digitalis, *Lancet*, vol. 2, Dec. 8, 1923, p. 1221. (2) RAVEN, M. O., Rheumatic Carditis, *ibid.*, p. 1227.

The treatment of chorea is notoriously unsatisfactory just as is the treatment of syphilis of the central nervous system.

The treatment of early cardiac disease is summed up in three words: rest, diet, fresh air. The importance of the two last is comparatively well recognized at present, but the length of the rest period advocated by Raven will be a surprise to many. Arguing from the policy followed in tuberculosis where rest of from one to two years is borne without complaint, he claims that the same system should be applied to early cardiac disease. The chief damage to be feared is to the myocardium; valvular lesions being of less importance. The chief effort should be to spare the myocardium and lessen the chances of reinfection and of relapse. Just as in rheumatoid arthritis each joint becomes a secondary focus from which re-

infection may arise under conditions of diminished resistance, so also in rheumatic carditis each lesion may continue to harbour organisms by which the body may be reinfected. The object then is to keep the patient in bed until the disease process has become healed, and until his resistance has been thoroughly built up. This may take weeks or it may require months, and no case should be considered free from the chance of relapse until three years of quiescence have elapsed. Prolonged rest should therefore be the keynote in the management of *carditis rheumatica* and while one cannot agree with certain claims as to the ease with which an advancing or a healed lesion may be recognized, still the points laid down for the judgment of the cardiac side of the disorder offer much food for thought.

D. S. L.

THE CAUSES OF A DECLINING TUBERCULOSIS DEATH RATE

A RECENT address by Louis I. Dublin, Statistician for the Metropolitan Life Insurance Company, New York, brings out the fact that there has been a marked decline in the tuberculosis death rate in America during the past twenty years. How much of this decline has been brought about by human effort? It would be superfluous to dwell on the magnitude of the effort, the enormous financial outlay, the concentrated labour of trained and devoted men and women; it must surely follow, as the night the day, that to this excellent work we may attribute these splendid results.

There is another aspect, however, from which the matter may be viewed. This point of view is occupied by the biological school; their explanation leads to the conclusion (in its most extreme form) that "there is no evidence that anything that man has done has

affected in either one way or the other the decline in the mortality of tuberculosis, a decline which has been continuous for nearly three-quarters of a century." Certain groups of individuals, they hold, are constitutionally prone to tubercular infection; the decline is due to the disease itself acting as a selective agent in eliminating less fit stocks and so preventing their reproduction. It would follow, therefore, that efforts directed towards improving the tuberculous individual's health, would conflict with the effects of natural selection.

Dr. Dublin points out that both views are at best only attempts at an explanation, and with a large quantity of data at hand he proceeds to test the theories. He begins with the fact that the tuberculosis death rate varies in different regions: the urban rate is everywhere and always higher than the rural, and

certain States have definitely higher rates than others. It would be difficult to explain these variations on grounds other than that environments or circumstances controllable by human plans, are responsible.

There is also the notable difference in death rate in the two sexes. Tuberculosis has a much higher rate in males than in females, all ages considered; this excess, however, does not appear until after the age of thirty: at younger ages the females show the excess. The explanation of this may not be quite clear, though several factors are probably concerned; the more stormy period of adolescence, the hazards of childbearing, and the increased numbers of girls who have undertaken work for which they are not as strong as men. It is a little clearer why the rate should alter after the age at which so many women marry and enter on a more sheltered life. The biological school have apparently offered no explanation of this variation.

There are also interesting racial variations which must be considered. The Hebrew race have a notably low death rate in comparison with their neighbours, and the Italians also. The Irish have an extremely high rate; at some age periods the rate is as high as is found amongst coloured males. But while this fits in with the biological view, it is also found that the rate amongst the Jews and Italians varies directly with the good or bad conditions under which they live. And the high rate amongst the Irish in their native land is surpassed by the higher rate amongst the same race living in New York City.

Further facts are presented regarding the relation of occupation to tuberculosis. So clearly defined is this relation that occupations have actually been graded according to the degree in which they are conducive to the development of this disease. Some interesting figures are also given which show

that amongst the groups into which it is possible to divide any large number of insured people, the tuberculosis rate varies directly with the economic level, being highest in the industrial group, and lowest in those of a higher social status. Amongst the children, however, it is different: the rate in this case is lower amongst the working classes, up to the age of twenty, from which time it rises.

The decline in the mortality from tuberculosis generally is itself analyzed, to further test the theories. In the last twenty years there has been a fifty per cent. decline, but, considered by groups it is found to have taken place more in some groups than in others; there has been a greater decline in the mortality rate amongst males than females, more amongst white people than amongst negroes, and more for certain age periods than others. The greatest decline has been in those groups in which the original rate was highest, and has been least where the rates were lowest. It is also instructive to compare the figures of the last ten years with those obtainable for the same period in Europe, for the latter show as decisive a rise in mortality from tuberculosis as the former do a decline. In Europe all the gains of thirty years seemed to have been lost in the years of the war and those immediately succeeding them. By 1917 the figures in Warsaw had risen from 306 per 100,000 (1913), to 840, declining in 1920 to 338. In Belgrade the rate rose to over 1,400 during 1918. Recent figures show that the rates have now reached the level they were at before the war.

Dr. Dublin concludes that, having regard to all the facts, the biological explanation leads us into further difficulties; the factors of immunity and racial constitution undoubtedly exist, but "in the last analysis, it is the kind of environment we live in that determines the high or low rate which prevails."

H. E. M.

PHYSIOLOGICAL STANDARDIZATION AND ITS LIMITATIONS

IN a recent lecture before the Pharmaceutical Society of England, Mr. H. A. Jowett, D.Sc., of the Wellcome Chemical Works, speaking on standardization of drugs emphasized the fact that our present method is inherently inaccurate, and is therefore, unsatisfactory, and should be regarded merely as a stop-gap until some more satisfactory way is discovered to test the amount of active ingredients in a drug. While our modern method of standardization is a definite advance on no standardization at all, nevertheless there is a possible margin of error to the extent of 20 per cent. The chief drugs which require physiological standardization are ergot, the digitalis group, pituitary extract, insulin, and the organic arsenicals. With regard to ergot, its standardization is particularly unsatisfactory because it contains a variety of active principles and it has not yet been decided which is of chief therapeutic importance.

There are several reasons for the inherent inaccuracy of our physiological standardization. The physiological tester is at the mercy of variations in the sensitiveness of individual animals, for living animals refuse to be standardized. This difficulty can only be lessened by using numbers of animals. This is not only expensive but there remains the problem of seasonal variations in their susceptibility. If isolated organs are employed the least variation in technique may produce serious error. Another difficulty is to establish some un-

varying standard with which to compare the drugs to be tested. In the case of digitalis ouabain is used but unfortunately it is difficult to obtain. A non-variable standard pituitary preparation has not yet been put on the market. In the case of the arseno-benzol group of compounds, not only had a suitable toxicity test to be found but also a test to estimate its therapeutic potency. As summarized by Dr. Jowett the present biological test undoubtedly eliminates any chemical preparation of this group with an undue degree of toxicity or of too low therapeutic efficiency; nevertheless it occasionally happens that some batches just as good as those that are passed, are rejected owing to variations in the animals used, and manufacturers are put to serious inconvenience and expense.

While there is no need to feel alarm about the efficiency of our present methods of physiological standardization, it is desirable that the profession should be informed that present methods are not perfect. Pharmacists and physicians at present recognize that some form of standardization is essential for all potent drugs, and especially for those drugs in which the active principles are so unstable that they cannot be isolated quantitatively. It is in these cases that a definite danger exists that inactive preparations may be dispensed and in them physiological standardization, even although to some degree imperfect, is necessary if the physician is not to be disappointed.

THE LADY BYNG OF VIMY FUND FOR MENTAL HYGIENE

IT will be of general interest to the medical profession of Canada to learn of the launching of the Lady Byng of Vimy Fund for Mental Hygiene. An account of a meeting held in Montreal

on January 15th for the inauguration of this project appears in the present issue of the *Journal*.

We heartily commend this campaign to our readers and we trust they will

give their support to it. The activities of this National Committee of Mental Hygiene are extremely important and we thoroughly endorse the sentiment of Mr. E. W. Beatty, President of the Canadian Pacific Railroad, who expressed himself as follows: "As Canadians we owe much to the Canadian National Committee for Mental Hygiene. This organization has laboured patiently, in a quiet but most effective way, in improving conditions throughout the country for the care of mental abnormals. While it is true that the chief responsibility of treating the insane and feeble-minded lies primarily with Governments, nevertheless, there is room and much need for such activities as have been conducted by the National Committee.

"This organization emphasizes the need, not only of providing institutional care for the insane and feeble-minded, but, rightly to my mind stresses the necessity for prevention and early treatment. I am informed that it costs upwards of \$7,000 to care for a single

case of insanity in a mental hospital over a period of years. On the economic side, therefore, it is important that activities should be conducted that have as their aim the heading off of the need of institutional treatment. I noted this quotation in a bulletin issued by the National Committee: 'Mental Hygiene is the last word in preventive medicine. Such types of failures as are represented in the asylum, the prison and the poorhouse will, of course, always be with us. But mental hygiene is primarily addressed to preventing such failures wherever possible.' It is work of this nature that is worthy of our unstinted support.

"In reference to the national fund for mental hygiene to which Her Excellency Lady Byng of Vimy has so graciously granted her name, I join with others in wishing the enterprise an unqualified success. Those of us who desire to improve the mental health of the people of the Dominion can, with advantage, subscribe to this worthy project."

Editorial Comments

We desire to call the attention of our readers to the paper appearing in this issue by Sir Henry Gray. The subject, "The Effects of Stagnation in the Ascending Colon," is one with which the name of Sir Henry has been associated for many years. He has laboured diligently to master the etiological significance of developmental anomalies in the intestinal tract, and has written various articles in British journals with the object of bringing home to the profession the advantage in some instances to be gained from surgical treatment based on such premises.

That intestinal stasis leads to disease and disability evidenced both locally in the alimentary tract and secondarily in other structures and systems is an accepted truth. Whether the causes of intestinal stasis are the upright position, and the presence of bands, adhesions,

membranes or long mesenteries, due to incomplete developmental fusions; whether all or most of these anomalies are otherwise congenital, and whether stasis which occurs is *post hoc* or *propter hoc*; all this is at the present time open to much controversy.

In the *British Medical Journal* of Nov. 25, 1922, we find the notes of a lengthy discussion on "Non-malignant affections of the colon," which was participated in by Lane, Waugh, Gray, Paterson and Walton. The diametrically opposed statements of these authorities upon such easily confirmed points as we might imagine anatomic findings to be, leaves the reader with the impression that such findings are very variable and to some extent dependent upon the theory held by the individual investigator. Surgical measures under such conditions are to be resorted to only after careful

study of each patient. The promiscuous division of hands for mobilization of portions of the bowel, or the promiscuous fixation and suspension of a mobile colon is to be deprecated. In the hands, however, of an experienced observer such as Sir Henry Gray, and with a careful selection of cases, the procedures advocated by Sir Henry are, we believe, productive of much good.

The Canadian profession will welcome further papers from Sir Henry, and any reports of cases on which he has operated.

It is with pleasure that we note the following cable sent by the President of the British Medical Association to the President of the Australasian Medical Congress in Melbourne last November: "Heartly congratulations from parent body to first Australasian Medical Congress held under auspices of Association. Best wishes for successful meeting. Sir William McEwen will tell how proud we are of this renewed evidence of strength of Association in Australasia."

We re-echo these congratulations and extend our best wishes for the future welfare of the Australasian Medical Association.

It is always interesting to compare our taxes with those of other people, and in a recent Government publication* it is possible to see how various parts of the Empire deal with the income tax. In some instances we find more of an attempt to fit the taxation to the individual's circumstances, chiefly by the plan of allowing deductions for certain expenses; in the Union of South Africa for example, allowance is made for the premiums paid not only on life but against "sickness," and in the state of Victoria allowances are made in respect of payments to qualified medical practitioners, hospitals, nurses or chemists. In other words, the "earner" is allowed to deduct the expenses he incurs in keeping his physical and mental machinery in working order, just as the factory owner is allowed the expense of repairs to his material machinery. It is easy to see how such deductions as those for medical expenses would beneficially affect the profession.

*Income Taxes in the British Dominions. H. M. Stationery Office.

In the Tanganyika Territory the medical profession has complete exemption from income tax, a happy state which, however, appears somewhat less impressive when we find that it is shared by all salaried and wage-earning employees.

We have received a copy of the report of the pathological laboratory of the Medical College Hospitals, Calcutta, for the year 1922, from Captain Geo. Shanks, now Professor of Pathology and bacteriologist to the Government of Bengal. Captain Shanks is a well-known Canadian graduate, who did good service throughout the European war, and then entered the Indian Medical Service. It is pleasant to receive this reminder from a Canadian. We gather from the report that his department is performing an increasing volume of work, which he explains as being due to greater co-operation between the clinical pathologists and clinicians. He regrets, however, the difficulty in obtaining consent for autopsies in India.

"The Pitfalls of Medico-Legal Practice" forms an alluring title, and from even a condensed report of a paper on the subject by Sir John Collie recently, some interesting points may be gathered. He advises medical men in medico-legal cases to conduct examinations in their own consulting rooms; the effect on the examinee is very great. He himself had refused to examine a case at a solicitor's office and the case was taken to the Court of Appeal and decided in his favour. He warns the doctor never to be in a hurry, and to keep his conclusions to himself or for the insurance company; to always take notes at the time, as notes made later on were not welcomed in the witness-box; to write his report free from the bias of sympathy and with no fear of libel, as such reports are privileged and if given to the proper persons a doctor's honestly expressed opinion might freely impute fraudulency or malingering. But one should never diagnose malingering hastily; he reminded his audience of the visitor who asked the ward attendant how the patients were getting on, and received the answer, "Oh, very well indeed, except for the malingerer in the corner: he died last night."

NOTES OF A VISIT TO SOME OF THE ANATOMICAL SCHOOLS AND SURGICAL CLINICS OF EUROPE IN 1887*

F. J. SHEPHERD, M.D.

Montreal

EARLY in July with Prof. Kerr of Winnipeg, I visited Germany after a delightful trip through Holland. In the Hague we saw the wonderful "Lesson in Anatomy," Rembrandt's masterpiece, painted when he was only 26 years of age. This is the picture of Prof. Tulpus giving a demonstration on the subject to his students and which is familiar to you no doubt through photos and chromos, which give but a faint idea of the original. In Hamburg we just missed Dr. Schede who was off on his holidays, but saw Dr. Weisinger, and were well treated by the assistants, who spoke very good English. The amount of material is enormous; the operations commence about ten in the morning and go on continuously until two in the afternoon—and this is daily. There are often two or three operations going on at the same time in the same room. Their methods are very thorough as regards antisepsis. The instruments are kept in glass trays in carbolic acid and the ligatures in alcohol. Here they endeavour to cure the patient by one dressing applied dry. The method of operation is as parts near to the seat of operation scrubbed follows: The patient is stripped and all the with soap and hot water and then deluged with sublimate solution poured over him. This of course makes everything in the neighbourhood very moist; the operating table and patient are continually deluged with sublimate and the surplus drains away to a central drain in the middle of the concrete floor of the operating room. The floor is so wet that the operator and his assistants wear large rubber boots to keep themselves dry. The spray apparatus which was used there a few years ago is now discarded; I saw it standing neglected in the corner of the operating room. It was of immense size and must, when in full blast, have obscured

everything, for it had enough steam-making capacity to move a good sized locomotive engine.

The Hamburg hospital is a very large one, some 800 to 1,000 beds. The wards seemed to me to be very much over-crowded, the ceilings low, no ventilation, and altogether the hospital is one from which no great surgical results could be expected. In is in fact more primitive in its style of architecture and arrangement than our own Montreal General Hospital. Still such is the care taken to have everything surgically aseptic that the results equal if they do not excel, those obtained in the most modern hospitals. There is no medical school in Hamburg so that strangers visiting the place are welcomed and allowed to see as much of an operation as one of the assistants.

From the wealth of material and the small number of visitors and spectators, a visit to Hamburg for the purpose of following for a few weeks the practice of its large hospital would well repay any of you who intend going abroad after graduation.

If one believes in the germ theory one should of course endeavour by all the means in one's power to prevent the entering into a wound during an operation and subsequently of all the disease producing and pus generating germs. Most surgeons nowadays believe (in a kind of way) that inflammation is due to the introduction of atmospheric germs into damaged tissue and if this introduction be prevented, the wound heals without inflammation. Now although this is the belief of most surgeons they do not act upon it. Those like Mr. Lawson Tait and Dr. Bantock who don't believe in germs being the *fons et origo mali* believe in cleanliness. Mr. Tait has asserted that if he could get enough dried germs he would use them as dressings for wounds—so little does he fear them. Their precautions are

*Part II.

not so elaborate as one would expect from a true believer. Such a true believer we find in Dr. Neuber of Kiel. He carries into his practice the legitimate conclusion which results from the adoption of the germ theory, and even good and orthodox antiseptic surgeons look upon him as an extremist. We saw him in Kiel where he has a private hospital. He was formerly Esmarch's first assistant, but quarrelling with him he built a private hospital exactly opposite to Esmarch's own, and has, they say, taken from him most of his private practice. His hospital is new and contains about 40 beds, 15 for first class and the rest for second class patients. The most remarkable thing about his hospital is the number of operating rooms which are the talk and amusement of German surgeons, and which he showed us with great pride. They have all concrete floors with a centre runway for surplus sublimate and the walls are also of concrete and can be easily and thoroughly washed. Each operating room has its set of instruments. The first and largest room is for septic wounds, the second for aseptic wounds, the third for chronic diseases, as those of joints, etc., the fourth for diseases of the genitals and rectum, and last, the holy of holies into which we infidels were allowed merely to look for a moment—for abdominal sections. Neuber is a short, stout, florid man, with a red and somewhat fat face adorned with a short flaxen moustache. He struts around in his aseptic white outer garment in a most imperious and self-conscious way; has a very overbearing manner; speaks in a loud voice to his assistants and patients, and as the English would say, has no end of "swagger."

To show you his method of procedure I shall describe one case. An old man about 65 years of age came in suffering from a very large abscess of the forearm. He was transferred to the henchmen of the great surgeon to get ready for the sacrifice. First he was stripped of all his clothes and laid on the operating table, the lower part of his body covered with a rubber sheet. Then the servant took a scrubbing brush and soap and scrubbed him thoroughly from his chin to the tips of his fingers, including also the side of the chest; then he cleaned and pared his fingernails and deluged him with several pailsful of sublimate solution. After this he was told to hold up the affected arm till

Dr. Neuber was ready for him. In some ten minutes Neuber came in his white linen coat and big goloshes with his assistants, similarly equipped, applied an Esmarch near the shoulder but did not give any ether. After artistically poisoning his scalpel he made a cut about six inches long in the arm and thus freely opened the abscess, the edges of the incision being held apart by the assistants with large hooks. He then took an enormous sharp spoon and scooped out all the inflammatory tissue and again used his Niagara of sublimate, after which he stuffed the wound with iodoform gauze. He then shouted out "los" or "let go." when the hooks were removed, and applied an enormous quantity of dressing (washed gauze) and over all a cotton wadding bandage. The Esmarch was loosened and the operation was over. The man, however, was compelled to hold his arm up for some ten minutes longer. In three or four days he would return; the wound would then be granulating and after paring the edges it would be united with sutures and the whole thing, so said Dr. Neuber, would be well in ten days. Dr. Neuber, as perhaps some of you are aware, was the first to introduce bone drains. But now he tells me he has discarded all drains and always does secondary suture. His method of treating carbuncle is heroic. He cuts it out, and after scraping the deep cavity, stuffs it with iodoform gauze, and after a week pares the edges and applies sutures and the parts unite by first intention. He showed us some cases in which he had done this and where the patients were well in ten days. He is a very able and original man; a quick, good but rather too showy operator, and a man very ready of resource.

After visiting the quaint old city of Lübeck we went to Berlin. The weather was so hot that there was no very great inducement to visit hospitals. We saw Bardeleben at the Charité but were not much impressed with either his methods or manners. He is very old-fashioned, talks a great deal about everything and nothing, and attracts only a small class. The great man in Berlin is von Bergman, head of the Imperial Surgical Klinik. He is a very able surgeon and one whose great reputation does not need any commendation from me. Von Bergman is about 50 years of age, a rather

large man with a dark beard and sharp features; he looks very much alive and is so. He has a very keen eye and makes up his mind rapidly when presented with a difficult case. The amount of work he does is simply enormous. He has six assistants who are kept busy applying dressings to patients on whom he operates. One afternoon I saw him excise six breasts with removal of axillary glands in all cases, and in two with ligature of the axillary artery; one excision of shoulder; one excision of the knee joint; one excision of the hip, and a case of trephining for head injury. This was all in one afternoon. As soon as a patient is operated on, the table is wheeled back into the large arena and an unoperated patient wheeled forward. The first patient has the dressings applied by the chief assistant and his assistants, and a new assistant helps with the next operation, and so on. There are continual relays of patients in the background waiting to be operated on. Each case is described by the professor and during the operation the steps explained. If there is any waiting for patients the professor talks about some case or brings in a case he has operated on some days before, to be dressed for the first time, probably, before the class. The students have no ward work here. The method of dressing is similar to that used in Hamburg; washed gauze, rubber drains and over all a cotton-wool bandage and then a starched one. The only difference is that they were less extravagant in their use of sublimate.

Professor Kuster has charge of a large hospital in Berlin. We went to see him and were received very kindly; no students attend this hospital, which is under the charge of Sisters, and in consequence the operating room is a very small one. Kuster has most of his operation cases in tents in the beautiful grounds attached to the hospital. All the cases we saw were doing well with the exception of a case of amputation of both thighs. We saw several abdominal sections for ovarian tumour and hydatid of the liver, one excision of the kidney, several hip and knee excisions. The dressing in all the abdominal cases was very simple, merely a coat of iodoform and collodion painted on, nothing else. Professor Kuster uses but little irrigation; he dreads sublimate for he has had several cases of poisoning from it. His methods are very simple and there is no show

about him. All his equipment is most plain, yet he does an enormous amount of work and his results are remarkably good. He is a youngish man, with nice open face, honest, earnest brown eyes; very courteous and pleasant to strangers, and in fact a perfect gentleman. His manners are in great contrast to those of many of his brother surgeons in Germany. I saw him excise a large tumour of the neck very skillfully and quickly. He is a very neat operator.

Hahn, of the Frederichsheim, we did not see as he was away; also Martin the ovariologist had his hospital closed to strangers.

Had the weather been better and had I not been prostrated with an attack of severe summer diarrhoea I should have seen more in Berlin. We one day went to Virchow's lecture on Pathology and after much difficulty secured a seat and heard the great man lecture. I also visited the magnificent anatomical institute in connection with the university. It is under the charge of Professor Waldeyer, assisted by Dr. Braeside. It is of magnificent proportions and contains numbers of rooms for original work. It is nearly as large as the Physiological Institute but not quite so ornate. The dissecting room is of large size and well lighted, but as it was out of session there was nothing there but empty tables and stools. Professor Waldeyer was busy in the histological department of the building and kindly showed us through there. Dr. Braeside piloted us through the museum. Although the museum has a great number of specimens they are crowded into a number of small rooms and badly arranged. Dr. Braeside said that they had not long got their specimens together and that he must apologize for the confusion. They had some good specimens of frozen sections suspended in alcohol in flat glass jars which showed them up very well. Among the skeletons are several giants who in life belonged to Frederick the Great's Grenadier Regiments. The basement is fitted up for storage and the injection of subjects. They gather their subjects in summer and keep them in slate tanks on shelves in a vapour of alcohol. There, as in most of the German schools, they use a preservative injection of alcohol, carbolic acid, and glycerin, and clean their bones by macerating them in water heated to about 100° F. for some weeks and then wash the fat out by

keeping them in a weak solution of soda or scrubbing them with a soda solution.

From Berlin we went to Halle a town in Saxony of about 100,000 inhabitants. It is the seat of a large university with a capital medical school. All the university buildings and kliniks are new and magnificent. Volkman's surgical klinik is very nearly perfection. Professor Volkmann has frequently been offered more lucrative positions elsewhere but has always declined them. It is said he can get anything out of the Government in the way of buildings and equipment, for you must know even the smallest town in Germany has a most excellent hospital under Government control. Volkmann's klinik is a very large one, some 400 beds, and the majority of the cases are bone and joint diseases. Volkmann is well known for his success in excision of the rectum for cancer, although his assistants tell me he can see much better results in his cases than they can. We unfortunately did not see Professor Volkmann as he was confined to his bed through illness while we were there, but his chief assistant showed us all the interesting cases. Professor Oberts who is a second professor there did the honours in the operating room and we tried to see the operations but only succeeded in seeing the head of the professor and the backs of the students. At first for a minute or two there is a fair view, but soon the students leave their seats and crowd round the operating table so that everything is obscured to the modest stranger and visitor. I was told by the assistants that this was all Volkmann's own fault as he frequently invited the students down into the arena (which is a large one) to see the operation to better advantage, the result being that only the most pushing and persevering ones see anything. Sometimes they crowd the professor so closely that he has to dig into the ribs of the nearest students with the ends of his ulnae in order to get elbow room, and when they crowd very closely he loses his temper, orders the students back to their seats and afterwards denounces them in no very choice language. Next day, however, he is in good temper again and the same thing is repeated. Notwithstanding these little weaknesses I am told that Volkmann is a very able and enthusiastic clinical teacher. We saw many interesting cases there of ex-

cision of the hip walking round with his special push-chair within two months of operation. The anatomical department I could not get into, it being closed and the professor being away. The building from outside is a very fine one.

From Halle we went to Leipsig but saw little there. The old fashioned hospital consists of a series of wooden barracks as they call them, at right angles to a central passage. Thiersch presides over the surgical wards but we did not see him. His chief assistant showed us over the hospital and we saw some very good cases of skin grafting for various operations. Two especially good ones in extroversion of the bladder. This was the only place in Germany where we saw the spray used. It was a mere survival, a vestigial remain, compared to the discarded ones we saw elsewhere. The anatomical department was good but no work was going on and the place was in the charge of a janitor. Numbers of excellent sections by Professors His and Braune were seen and some good obstetrical preparations. It was here I saw the beautiful casts of dissection, etc., some of which are now added to our museum.

We next proceeded to Göttingen where we spent a day with Professor Koenig. Koenig is well known for his excellent surgery and his special work on joints. The hospital is an old fashioned one but it has a fine operating room. Koenig was most civil and polite and did everything in his power to show us all his methods. There was nothing very new. A number of urethral and bladder cases were operated on, but in this department of surgery the Germans do not shine and they are surpassed easily by their neighbours the French. The Anatomical Institute is a curious old place and contains the original collection of skulls made by the celebrated anatomist Blumenbach. The lecture room is on the old plan, a central "pit" with rows of seats all round and I should think must be very inconvenient for lecturing but good for demonstrating; in fact it was designed especially for this purpose when subjects were scarce. As in most of the smaller places we went to, the dissecting room was quite bare.

We continued on our journey visiting Marburg in Hesse, a most beautiful old town where I had years ago spent some months, and here I renewed acquaintance with old friends and

was treated as well as the returned prodigal is reported to have been. There is a fine old anatomical museum here which was founded by the late Professor Lieberkühn, and a fine collection of sketches of the various races. The surgical hospital is a very ancient one and was under the charge of Professor Roser. The surgery is old fashioned as the professor has always been opposed to new fangled ideas. The chief beauties of Marburg are the situation of the old Ste. Elizebethan Kirche built in the 13th century and quaint old Castle on the hill in the middle of the town. There is a museum here in the Old Hall celebrated for its being the place where the famous disputation between Luther Zwinglius and Melanethon took place in 1529.

After leaving Marburg we went through Giessen to Frankfort where nothing was to be seen in the medical way. We then visited Heidelberg and saw Czerny, the celebrated surgeon, who showed us some interesting cases, among them being two of nephrolithotomy and one excision of the kidney. Czerny still uses the spray in his laparotomies I was told. I also visited the fine anatomical department under the directorship of Professor Gegenbauer, but like all the other places it was occupied by a janitor only. The museum is small and insignificant. Czerny's hospital is a very complete one; he has seventy beds arranged in two buildings isolated from each other. Each building has four one-storey pavilions which are parallel and separated by a garden. One of the buildings is entirely for septic cases, croup and suppurating wounds. The croup (diphtheria) pavilion is divided into a number of small rooms holding two or three patients, kept at a high temperature and saturated with a vapour of water and chloride of potassium which is being continually generated by a steam apparatus. We saw many tracheotomies. No dressing is applied to the tracheotomy wound. The septic block has a separate operating room furnished with instruments used nowhere else. In the aseptic building is a fine amphitheatre for clinics, with mosaic floor and two operating tables. Antiseptic solutions for operator and assistants are on tap and for washing purposes and labelled "before operation," "after operation." In this wing are four pavilions, two for men and two for

women. Each pavilion contains about 20 patients and at the end of each is a private room for particular cases.

After enjoying the view from the castle and hill, which is so familiar to everyone from the pictures, and crossing the historic old bridge over the Neckar, we went on to Strassburg. Here the Germans have erected a magnificent set of university and hospital buildings, eye and ear clinics, throat and lungs, gynaecology, medical and surgical, etc., and an anatomical and physiological department. This is the home of the illustrious Hoppe-Seiler. We went through the buildings guided by one of the surgical assistants, a German American who was very obliging and attentive. In the surgical department we saw Lücke, celebrated for his great success in the operation of gastroenterostomy, introduced by him. We saw some cases that had been lately operated on. The operation consists in establishing a communication between the stomach and the duodenum or some other part of the small intestine when there is disease or obstruction at the pyloric end of the stomach. In some knee cases we saw Lücke's favourite dressing of sugar applied. We also saw Professor Kussmaul, well known for his plan of relieving intestinal obstruction by washing out the stomach. Strassburg is not yet thoroughly Germanized and although the people are German they prefer to talk French and dislike exceedingly the Germans and their overbearing manners. The gorgeous old cathedral is one of the great sights of Strassburg.

Before leaving Germany I might say with regard to the surgery as seen in the hospitals, that it is nothing if not operative. It seems to me that German surgeons thought nothing of a case if they could not operate on it, and in my opinion they often operated unnecessarily and sometimes recklessly. For instance I saw a case of lymphadenoma where all the glands in the body were enlarged, neck, axilla, groins and retroperitoneal and I presume intrathoracic as well. They intended removing all they could and I saw them remove three of the neck and axillae and as soon as the wound caused by the removal of these healed they were going to tackle the groins and afterwards do an abdominal section and endeavour to remove the retroperitoneal glands. I said, "surely you won't stop there, why not open up the

thorax and remove the intrathoracic?" They smiled and said they would wait and see the effect of the operations they had already planned. They run to extremes both as to manners and methods, and I should be curious to see their methods ten years from now. The number of cases under the care of each surgeon is enormous and so, consequently, is the experience obtained and I do not deny but that they make good use of it. The peculiar docility of the German patients enables surgeons to put in practise methods of treatment often of an experimental nature which would not be tolerated on this side of the Atlantic or in England.

The amount of bone disease one sees in Germany is an awakening to one accustomed to the practice of excision in Canadian hospitals. In nearly all the hospitals almost three-fifths of the cases consist of tuberculous disease of bone and osteomyelitis. This is due to the miserable food and poverty of many of the people. I was surprised to find that in but few of the German hospitals were students allowed in the wards; they are taught altogether in the operating theatre. It seemed to me that the German system of teaching medicine produced a number of inferior men and a few first class ones; resulted in fact, in educating a few men highly and well, but many are sacrificed. No doubt many good men are produced and the opportunity for original research is great. But in anatomy for instance the professor thinks more of his original investigations than of teaching his students. The anatomical museums and the facilities for teaching are greater in Great Britain. In surgery in Germany, if a man is fortunate enough to get an assistant's post his opportunities for teaching and for promotion and future success are great, but if not he sinks to the level of the average. The methods of dressing have changed greatly of late years and nearly all the surgeons use the dry form of dressing. The actual ritual of Lister is not thought so important as these few rules followed at Heidelberg, Göttingen and elsewhere: (1) Absolute disinfection of the part to be operated on and its neighbourhood; (2) Rigorous antiseptic cleansing of the hands of operator and assistants; (3) careful disinfection of instruments and the dressings. By this means and the use of a sublimate or carbolic lotion

during the operations the best hopes are afforded for the good results of that operation.

Before I close this already too long address I must say something about Paris, which I visited at the end of August. It was rather an unfortunate time as most of the hospital surgeons were away on their holidays. However, we went round the various hospitals with their assistants and saw the way they conducted their clinics and treated their cases. Paris is far behind in hospital surgery; that is general surgery. The principles of antisepticism have never been fully grasped and the spray which has been abandoned nearly everywhere else has only just been introduced. These Parisians seem to think that everything worth knowing can be learnt in Paris and that there are no surgeons outside of Paris. They can learn nothing from outside. From the Germans of course, they will not accept anything, even their science; and they detest the English almost as much. The hospitals are filled with venereal cases. I did not see many interesting surgical cases and what I did see showed me that the surgery was not cleanly. I visited the Charité, Necker, St. Louis, Hotel Dieu and Salpêtrière. Chareot and Pasteur were both away, so was LeDenton, Polaillon, Trelat and Champonnière and Terillon; but we saw Guyon and Pean.

The museum of St. Louis is remarkable for its models of skin diseases; they are the most perfect representations I ever saw. The method of preparation is a secret; the material used is not wax but some preparation which is elastic, like rubber. Dupuytren's Museum at l'Ecole de Médecine has many wonderful preparations of bone diseases and some of the specimens are quite historic, but they are fast going to decay, covered with dust and badly arranged. It bears no comparison to the museum of the Royal College of Surgeons of London. I had the pleasure of seeing Pean operate several times in private for ovarian and other abdominal tumours. He is a large, thick set man with very broad shoulders, short, thick neck and an enormous head. He wears side whiskers and has a very determined face; one can see at once that he is a man of great force of character. He and Lawson Tait resemble each other somewhat. When operating he sits in front of his patient at the end of the table

between her legs. He is a wonderfully rapid and dexterous operator. I saw his readiness in one case which I shall presently describe. He uses but few sponges but employs dry linen napkins which he tucks in around the edges of the abdominal wound. He uses an enormous number of forceps, all shapes, curved, long, short, fenestrated, and has always several hundreds in readiness under the charge of the instrument maker, who is present at all operations. The instruments are not placed in any antiseptic solution nor is any special precaution as regards wound infection observed. Sponges on holders are occasionally used to swab out the fossa of Douglas and these are wrung out of weak sublimate lotion. Pean operates at a private hospital in charge of the Sisters of Charity and before an operation quite a number of foreigners are assembled who are furnished with cards of admission. These are chiefly Spaniards and South Americans with whom Professor Pean does a large consulting practice. Soon the great man appears decked in a swallowtail coat and enormous shirt front, and after most pleasantly greeting us all and shaking hands warmly we are asked up to the small operating room where the patient is under ether and in charge of the two assistants. Both of these are quite old men who have assisted him for the past 15 years, and during the operation they are continually abused and sworn at by their chief, who talks all the time, and the better the operation is going the worse is the language he uses. But when any difficulties arise then he is silent as the grave and his assistants have a rest and do not perspire so visibly. The case I referred to was as follows: A woman, aged 40 had suffered from a tumour of the abdomen for some years; several men had refused to operate because of its supposed malignancy. At last one undertook the operation but on account of the difficulties had to abandon it. When she came to Pean she had a large ulcerating surface between the umbilicus and pubis and in the centre of this was a faecal fistula communicating with the large bowel. The whole ulcerating mass was much indurated and connected with a large tumour which filled up the true pelvis. Pean tackled this case by first excising, by an elliptical incision, the fistula and ulcerating mass, and then dissecting out the tumour,

which was everywhere adherent. This he did rapidly, always applying a pair of forceps before cutting so that at one time he must have had several dozen forceps employed. In his dissection he removed nearly all the contents of the true pelvis and appendages, posterior wall of bladder and a couple of feet of bowel, principally sigmoid flexure. He did all this rapidly and so skillfully did he use his various forceps that very little blood was lost. He certainly impressed one with his readiness, resource, rapidity, skill and presence of mind in this operation, which presented such difficulties that but few surgeons would have been able to overcome them. When I left Paris a week after the operation the patient was still alive but what the ultimate result was I do not know.

At the Hospital Neckar, Guyon may be seen three times a week at 9 a.m. He is a very handsome man with a mild English-looking face, clear cut features, and well shaped mouth. I never saw a man so dexterous in urethral surgery and with such delicacy of touch. The amount of material at his disposal is enormous and good use he makes of it too. Any morning one goes there one is sure to see a case of lithotrity or lithotomy (suprapubic); there are always cases of stricture with perineal section and occasionally a tumour of the bladder. I saw several lithotrities and lithotomies. In the former operations he uses two lithotrites one heavy toothed for breaking the stone, and one flat bladed smaller one for breaking the pieces; he uses a small evacuator because he crushes so finely. He performs his operations very rapidly and is very cleanly in his proceedings. All his instruments are dipped in boracic solution before use and wiped with a clean linen napkin. He washes out the bladder in all cases with a weak boracic solution and does this with a brass syringe which has a pointed nozzle; this fits into his catheters. In evacuating the crushed stones he always presses the rubber ball with expiration and the outflow of water and with it the debris of stone is evacuated during inspiration. He uses a great many instruments in perineal sections, but his methods and skillfulness contrast most favourably with the clumsy urethral surgery I saw in Germany. It is the one thing that France is ahead of Germany in, viz. urethral surgery. To illustrate Professor Guyon's skill let me tell

you of one instance I witnessed. A man was admitted into his ward with a long piece of soft rubber catheter which had broken off in his bladder. Guyon introduced a small lithotrite talking all the while and telling us what he was doing. He said after a few seconds, "Now I have got hold of it but it is cross-ways. In these cases it is very important to seize the foreign body in its long diameter. Now I shall move the instrument along so; now I have it properly seized." And so he had for on withdrawing it was grasped by the instrument

lengthways and followed quite easily. He seemed as if whilst he was operating he had eyes at the end of his instrument, so accurate and sensitive is his touch.

But I fear I have already trespassed too much on your time, and trusting that my sketchy account of a very profitable and pleasant trip may prove of service to some of you who may be going abroad, and thanking you for your attentive hearing, I shall now leave you in that most delightful of all cities where good Americans go when they die—Paris.

Some Effects of Therapeutic Application of External Heat.—The scientific study of therapy at present is turning away, to some extent, from the rather exclusive consideration that drugs have received in the last few decades. Physical therapy and the application of various environment factors, such as sunlight and fresh air may involve, are receiving attention from new points of view. Their reputation as remedial agencies is being subjected to careful and critical scrutiny. Serious attempts are being made to disentangle fact from fancy in the allegations of climatotherapy in its varied aspects. It is time that this should be so. Long empiric experience indicates an undoubted modicum of truth in many of the reputed claims. It should be established on a firm basis that permits of rational application rather than guesswork and hit-or-miss schemes applied to humankind. Furthermore, not until the possibilities and limitations of physical therapy are clearly recognized can the faker be attacked with propriety and success. These comments have been elicited by contemplation of the recent researches at the Presbyterian Hospital in Philadelphia on the effects of external application of heat, a therapeutic measure that has long found favour in the management of certain types of diseases. The work of Pemberton and his associates there has demonstrated that, as a result of external heat such as is represented by "electric bakes," the blood becomes more alkaline; there is a fall in its total content of carbon dioxide, and a slight rise in alkali reserve. These changes in the acid-base equilibrium of the blood cause compensatory changes in the urine and sweat. The

loss of carbon dioxide by the body during the heat experiments is undoubtedly of prime importance as a factor that leads to a greater alkalinity of the blood. The increased blood flow during a bake presumably favours a more ready gas exchange between tissues and blood. The Philadelphia clinicians regard it as rather surprising that changes in the acid-base equilibrium of the blood of the magnitude here reported should follow what is considered mild exposure to heat. It suggests that indiscriminate and extreme employment of heat in therapy may lead to serious disturbances. Perhaps, as they add, there is here afforded some explanation for the baneful effects not infrequently experienced by patients at uncritical hands. Arthritic patients, in particular, have been the subjects of all sorts of thermal therapy. So far as the latest observations go, there is no indication that the response to heat by the arthritic patient is different from that of other persons, at least so far as it concerns acid-base equilibrium of the blood.—*Jour. A. M. A.*, Nov. 17, 1923.

Sir:—A doctor told me that he was once called in to see a country-woman who was in a serious condition. She was well-to-do, and he expressed surprise that she had allowed her trouble to go on so long without having a doctor. "Oh, I have had a doctor," she said, naming a sort of quack of the countryside. On his expressing surprise at her employing this man, she exclaimed: "I knew he was killing me, but he owed me some money, and it was the only way I could ever get it out of him."

Abstracts from Current Literature

MEDICINE

The Simulation of Active Tuberculosis by Painless Maxillary Sinusitis. Yates, A. L. *The Lancet*, Nov. 3, 1923.

In this paper attention is directed to the type of case in which there are exhibited all the symptoms of pulmonary tuberculosis, but in which, actually, the primary condition is a sinusitis with no localizing symptoms. The differential diagnosis is extremely difficult. The subject had apparently attracted no attention until 1916, but since then several series of cases have been reported, in which bronchitic affections have been shown to depend on disease of the accessory sinuses.

Dr. Yates explains the nasal protective mechanism; how, normally, the ciliated epithelium and mucous secretions of the nasal passages dispose of micro-organisms. But any deformity in the passages hampers this disposal and tends to produce congestion and increased mucus. This may be increased by blocking of the antral opening in the middle meatus, leading to infection of the antrum and breaking down of the protective apparatus, included in which is paralysis of the cilia. If the infection is eventually cleared away, the nasal passages in front of the antral opening may appear normal, but behind this point the mucous membranes show much reactive change, due to the flow of mucus, which passes down over them to the laryngo-pharynx and is coughed up, usually in the mornings. It is the delayed removal of this pus which causes absorption, with consequent fever, night sweats and wasting.

In painless maxillary sinusitis there is usually some enlargement of the middle turbinate, posteriorly, and pus may be seen under it; the naso-pharynx shows mucus, the soft palate is thickened and is more sensitive than usual; the posterior wall of the naso-pharynx is reddened and shows a network of vessels with thick mucous membrane between them. The larynx also may show reddening and thickening of its mucous membrane, extending into the trachea. There is usually also accompanying tonsillar hypertrophy.

With coexistent pulmonary tuberculosis the signs are somewhat modified; there is a marked pallor and lack of sensibility in the mucous membranes of the palate, pharynx and larynx.

He dwells on the fact that pain is not a prominent symptom unless there is an obstructive sinusitis, preventing the easy escape of the mucus into the naso-pharynx. The sinuses and especially the maxillary sinus, are the chief source of the purulent conditions. Dental disease is most frequently the cause of the maxillary infection. Frontal and ethmoidal sinusitis are usually painful and so do not complicate the diagnosis of chest conditions.

He concludes that sinusitis may give rise to a bronchitis, and this latter may continue indefinitely without symptoms of the underlying condition, until other factors make it painful.

H. E. MACDERMOT

Subacute Bacterial Endocarditis due to a Hemolytic Hemophilic Bacillus. Miller, C. Philip and Branch, Arnold. *Arch. of Int. Med.*, Dec., 1923.

The authors describe a case which showed a typical clinical picture of subacute bacterial endocarditis. A diagnosis of "heart disease" was made in the case of a school girl 12 years old, who five months before admission to the hospital had an attack of fever lasting two weeks without other symptoms. Three and a half months later she had a second attack of fever with progressive anaemia terminating in death on the fiftieth day. She was in hospital for nine days. There was a systolic murmur in the apical area of varying quality. There was also present superficial tenderness over one patella; tender finger tips and toes; petechiae in the skin, conjunctivae and oral mucosa. The spleen was palpable. Moderate leucocytosis and low grade haematuria were present. The patient had bacteraemia increasing in intensity during the last week of illness, and a Gram negative, hemolytic, hemophilic bacillus was isolated. This organism was agglutinated by the patient's serum in 1-160 dilution. This organism differed from Pfeiffer's bacillus in that (a) It causes hemolysis; (b) It occurs only as

a saprophyte; (c) It is less strictly dependent on haemoglobin; (d) It may have a coarser morphology; (e) It is slightly more difficult to keep in culture.

The postmortem examination showed the mitral valve to be involved. On the aortic cusp was an irregular, pale pink vegetation which measured $2.4 \times 1.8 \times 1$ cm., only slightly friable and firmly attached to the free edge. It involved the chordae tendineae, but did not extend for any appreciable distance on to the auricular surface of the valve. On the non-aortic leaflet, anteriorly, there was a smaller, irregular, tongue-like vegetation measuring 4mm. in diameter. The other valves showed no macroscopical lesions. A section taken through the larger vegetation, stained and examined microscopically, showed the presence in the vegetation, and the valve itself, of an organism similar in morphology and staining properties to that isolated from the blood.

At the bifurcation of the aorta into the common iliaes there was an aneurysm the size of a large walnut. The aneurysm extended down the right iliac between the intima and media for 1.5 cm., then re-entered the lumen of the artery.

The spleen weighed 340 gm. and showed old and recent infarcts. The kidneys showed numerous yellow infarcts. The sphenoidal and posterior ethmoidal sinuses were filled with about 1 cc. of very thick tenacious pus. Smears showed Gram positive, encapsulated, elongated cocci in pairs. No Gram negative organisms were found. The tonsils showed no evidence of disease.

Experimental Infectious Streptococcus Endocarditis and its Arsenical Therapy (Sodium Cacodylate). Bargaen, J.A. *Arch. of Int. Med.*, Nov. 15, 1923.

A variety of organisms have been found to be responsible for endocarditis, but the writer states that there is one which is more frequently found than any other, and this is streptococcus viridans. Experimental work in this connection has not been extensive, in comparison with the clinical references, but such work as has been done shows that the effect of injections of bacilli into animals depends on the virulence of the germ, the native agglutinating power of the animal, and the phagocytic pro-

perties of the leucocytes. If not virulent enough, the bacilli disappear from the circulation and accumulate in the capillaries and venous sinuses, to later reappear and set up a septicaemia or localize in various organs. It has been made clear that many bacteria have a special affinity for certain tissues. In the treatment of valvular endocarditis, experimentally, Allison has used arsenical preparations, and he found that in rabbits so treated the mortality was 30% less than in a group not so treated. In clinical practice, intravenous injections of sodium cacodylate have been used in several cases, and while more observations are necessary, the results have been distinctly encouraging. The writer gives the results of animal experimentation in this matter, first producing endocarditis in rabbits and then observing the influence of sodium cacodylate on the condition. His conclusion is that sodium cacodylate seems to have some beneficial result on the healing of heart valve infections, and, further, that arsenical preparations, such as the cacodylate, may have a protective power for the endocardium; for he found that the animals who first received repeated injections of this drug seemed better able to destroy subsequent injections of streptococci.

H. E. MACDERMOT

Antitoxin in Diphtheria—A Comparative Study of the Usual Methods of Administration with the Intraperitoneal Method. Platow, E. S. *Arch. Paediat.*, Sept., 1923.

The author has used the intraperitoneal injection of diphtheria antitoxin in twelve children, at the Willard Parker Hospital. He discusses the relative advantages and disadvantages of the subcutaneous, intramuscular and intravenous methods, under three headings: (1) the relative technical difficulties involved; (2) the reaction, local and general; (3) the rapidity of absorption.

Subcutaneous and intramuscular injections are simple to perform. The intravenous method is difficult in young children, even in expert hands. The intraperitoneal injection, by Blackfan's method, is quite simple. As regards reaction, there is usually more or less localized tenderness for several days after subcutaneous and intramuscular injections. Severe constitutional reactions are uncommon. The intra-

venous method causes no local discomfort, although there are occasionally severe general reactions, with chills, hyperpyrexia and even convulsions. This is less apt to occur with the use of the refined antitoxin which is now used for intravenous administration. The intraperitoneal injection first tried out on rabbits, caused no local discomfort or constitutional symptoms. Autopsies in two of the patients who died 36 and 48 hours after the injection showed no abnormalities of the peritoneal cavity.

The absorption was estimated by the amount of antitoxin found in the blood at intervals after injection by the different routes. The intravenous method showed the largest amount of antitoxin in the blood, and of course this was present in its maximum amount at the beginning. The absorption by the intraperitoneal route was much faster than by the intramuscular, especially in the first few hours, the most important time. The peak of absorption by the intraperitoneal route was at 36 hours, whereas with the intramuscular method it was between 48 and 72 hours. The comparison between the intramuscular and subcutaneous methods showed more rapid absorption by the former method.

S. G. Ross

PAEDIATRICS

Types of Organism in a Series of Tuberculous Children. Keith, Gordon and Brown, E. W. *Am. Journ. Dis. of Children*, 1923, xxv, p. 234.

This is a study of the percentage of bovine and human infection in a series of thirty tuberculous children belonging to the Boston district. The material to be tested was injected into rabbits to determine its virulence. Guinea-pigs were obtained on Dorset egg medium. The human type was characterized by: (1) equally luxuriant growth on egg and glycerine egg media; (2) macroscopic appearance of growth in 16-21 days; (3) dry and "crumbly" colonies. The bovine type were recognized by: (1) very scanty or complete absence of growth on glycerine egg media; (2) constant but less luxuriant growth on pure egg media; (3) growth never appears before 21 days; (4) moist and flat colonies. The organisms in thirty tuberculous children varying in age from 4 months to 11 years were then investigated.

The bovine organism was found in 10, or 33-1/3 per cent. Twenty-three of the thirty children were under five years of age, and of these the human organism was found in seventeen. The remaining seven cases showed the bovine organism in four and the human in three. Twenty-two of the cases ended fatally and of these four were due to the bovine organism. The human type was the infecting agent in all cases of respiratory origin, and the bovine in all cases of alimentary origin. Seven cases gave a history of contact with tuberculous persons and in six of these the human organism was found, the one exception being a patient who had been exposed to a younger brother who died of generalized tuberculosis. One of the bovine cases had been fed solely on "certified" milk. The herd supplying this milk were investigated and found to be tuberculous.

The Causation of Intracranial Haemorrhages in the New-Born. Ehrenfest, Hugo, M.D. *Am. Journ. Dis. of Children*, Dec., 1923.

The purpose of this article is to impress upon obstetricians and pediatricists the purely mechanical causes of this condition, the author believing that pediatricists and surgeons into whose hands these cases come later, overrate the rôle played by the haemorrhagic diathesis in the etiology of these haemorrhages. In addition to the excessive moulding and compression of the skull in difficult labours and forceps deliveries, resulting in intracranial injuries, Beneke has shown that in normal easy deliveries there is frequently trauma to the intracranial contents. In properly performed autopsies on still and newly born children, damage to the intracranial structures is found in fifty per cent. of cases, which may not be directly responsible for death nor associated with any haemorrhages. These figures show that intracranial birth injuries must be very frequent.

Moulding of the head may cause intracranial haemorrhages in two ways, firstly, overlapping of the skull bones, with pinching of the dura between them may cause rupture of the veins emptying into the transverse or the longitudinal sinus, or even tearing of the sinus itself; secondly, horizontal pressure on the skull, with moulding, increases its vertical diameter, with an increase of the tension on the falx cerebri and on its insertion into the tentorium cerebelli,

with or without tear of the structure and haemorrhage. This moulding and pressure on the skull may occur during difficult or easy labour, during resuscitation by Schultze's method or even during Caesarean section.

The author does not believe that asphyxia *per se*, is a direct cause of intracranial haemorrhage, though it may be a contributory cause, in that a congested blood vessel may bleed more readily. It is difficult to decide whether the asphyxia causes the haemorrhage or whether the haemorrhage with damage to the respiratory centre is the cause of the asphyxia. The latter would appear to be more reasonable. As regards hemorrhagic disease of the newly born, the author believes it to bear only an accidental relation to intracranial haemorrhages. A slight injury to a child with a delayed clotting time may be as disastrous as a more severe initial injury to a child with normal clotting time. The varied symptomatology of intracranial haemorrhages may be accounted for by the frequent involvement of more than one structure in the injury and these multiple injuries show the futility of surgical intervention in many cases.

R. R. STRUTHERS

The Etiology and Treatment of Herpetic (Aphthous and Aphtho-Ulcerative) Stomatitis and Herpes Labialis. Gerstenberger, H. J. *Am. Jour. Dis. of Children*, Oct., 1923.

Gerstenberger reports a series of cases of the above disorders treated by yeast vitamin tablets (water soluble B), or by orange juice (water soluble B. and C). He puts forward the interesting theory that herpetic stomatitis and herpes zoster may be manifestations of an avitaminosis similar in origin to beri-beri, in that in all his cases, prompt cure of the herpes followed the administration of yeast vitamin tablets. Orange juice which contains both the anti-neuritic and anti-scorbutic vitamins, was first used in the treatment of two cases of herpetic stomatitis, followed by prompt cure.

In cases of mouth infection complicated by presence of Vincent's organism, he suggests that the good effects following the administration of the water soluble B vitamin may be due to a change in the local character of the tissues which increases their resistance and renders them a less satisfactory culture medium for the growth of these organisms. Certain cases of scurvy, due

to absence of water soluble C vitamin, complicated by ulcerogangrenous stomatitis, due to Vincent's organism, react more favourably to intravenous injections of arsphenamine than to anti-scorbutic therapy, as reported by Morgan of Toronto. Gerstenberger suggests that by administration of the B vitamin, the tissues of the mouth are restored to a normal state and so conditions become unsuited for the growth of the spirilla and fusiform bacilli. The author also suggests, following Heubner, that scurvy of adults, complicated by severe oral ulceration is a different disease from scurvy of infants, in that it may be due to lack of vitamin B in addition to lack of the vitamin C.

It has not been the custom on this continent to pay close attention to the quantity of B vitamin in the diet, taking for granted that the average diet with fruit and vegetables contained enough. However, the need for this vitamin may be a relative one; anything which makes the metabolism operate at a higher rate (fever, pregnancy, lactation, thyroid disease, in which herpes is a common occurrence), may produce a relative lack of the vitamin B. It would seem wise to make sure that the diet contained some water soluble B rich food, of which canned tomatoes is a good example.

R. R. STRUTHERS

PSYCHIATRY

General Paresis. What it is and its Therapeutic Possibilities. *Amer. Jour. Psychiatry*, April, 1923.

The author cites Nissl's and Alzheimer's diagnostic criteria, i.e. a diffuse inflammatory reaction in the cerebrum tending to localize about the blood vessels and in the meninges, the inflammatory elements consisting of lymphocytes with a high percentage of plasma cells; and further, a degeneration of the parenchymal cells with a compensatory increase in the glia elements, and some changes in the blood vessels.

But practically all these changes are found in non-paretic neurosyphilis, and the amount of nerve cell destruction and the amount of plasma cell infiltration are considered the factors determining diagnosis.

Pathological study of brains from cases diagnosed general paresis shows marked differences macroscopically and microscopically. The com-

bination of the findings of meningitis, perivascular infiltration and cortical atrophy varies greatly.

Also, it must be remembered that in cases of general paresis one may find evidence of true tertiary syphilitic lesions in the form of gummata throughout the brain.

It is apparent that when one speaks of general paresis one does not conjure up a simple well-defined and always similar brain picture.

Nissl and Alzheimer worked out the pathology of general paresis on a series of typical cases in which the clinical diagnosis was relatively sure. Since then other clinical groupings have been included, and Nonne makes the following classification:—typical general paresis, Lissauer's paresis in which focalized lesions predominate, and atypical paresis.

After mentioning the work of Noguchi and Moore in finding spirochetes in the brains of paretics and the recent work of Forster in Germany and Wile in America in finding spirochetes by puncture of the brains of living paretics, he cites the theory advanced by Jahnel that paretic seizures are due to a "swarming" of spirochetes just prior to seizures, this being analogous to what occurs in malaria in the production of a chill. When this occurs in a motor area of the brain there is a motor response in the form of a seizure. On the other hand, when a sudden liberation of spirochetal toxins occurs in other parts of the cortex, psychic manifestations are likely to appear. These observations and others tend to support the hypothesis that there is a direct relationship between the activity of the spirochete and the pathological and clinical phenomena.

There is as much variation in the amount of vascular and cortical spirochetosis as there is in the histo-pathological picture.

The serological findings are very important for differential diagnosis. In general paresis the cell count tends to be under 100 cells per c.mm. spinal fluid. Globulin and albumen are present, and the Wassermann reaction is strongly positive in small amounts, for instance in .05 to .02 of a cc. of spinal fluid. The gold-sol reaction shows the paretic curve.

But there is danger in sticking too closely to these ideas about the serology. There are cases of stationary paresis in which the findings are not characteristic. The author challenges

Head and Fearnside's dictum that if the serology in cases of neurosyphilis remains unchanged after six months of treatment the case is one of paresis, and if on the other hand the serology becomes negative within this period the case is not paresis. Their conclusions, he contends, are based upon clinical experience uncontrolled by pathological studies and on cases not followed a sufficient number of years to justify their conclusions.

The author emphasizes the fact that there are cases of neuro-syphilis which do poorly with systemic treatment but which improve clinically and make serological recovery when subarachnoid injections or spinal drainage are given. Head and Fearnside's cases were given moderately intensive systemic treatment. Also, the author is prepared to cite cases conforming to the established clinical histopathological and serological criteria in which negative serology developed as a result of anti-luetic treatment, but the patients died later.

Clinically and serologically it is often entirely impossible to differentiate between the paretic and non-paretic forms of neurosyphilis. The therapeutic test, although of some practical applicability, is theoretically untenable, and in practice often leads to erroneous conclusions.

Meningeal and perivascular changes are theoretically amenable to treatment in paretic just as in non-paretic neurosyphilis. In cases in which these changes predominate and parenchymal degeneration is slight, we are justified in expecting improvement. And since parenchymal atrophy is apparently due to the activity of the spirochete, this process may be stopped if we can kill the spirochetes.

Unfortunately spirocheticidal drugs put into the blood stream have great difficulty in reaching the deeper lying tissue of the central nervous system, although in some cases arsenic has been found in small quantities in the cerebrospinal fluid after intravenous injection.

The author's experiments have shown that drugs or serum introduced into the lumbar subarachnoid space reach the cerebrum only in very small quantities, whereas when introduced into the cisternal region or into the cerebral ventricles they reach the brain in large quantities.

The author expresses no opinion as to the value of Dercum's method of draining off as

much spinal fluid as will come, a dose of salvarsan or mercury having been given. By this means more salvarsan is supposed to reach the brain tissues.

As to results of treatment, the author states that there can be little doubt but that many cases diagnosed as general paresis have had complete and long-standing remissions after treatment. In other cases a condition of stationary paresis has been brought about by treatment, a condition which occurs very rarely in untreated cases.

If treatment is to accomplish anything in cases of general paresis, it must be pushed to the limit of the patient's tolerance. If one plan fails another must be tried. Lately the author has adopted the plan of combining the methods of intra-thecal and intravenous therapy and spinal drainage; semi-weekly injections of arsphenamine associated with spinal drainage; lumbar, cisternal or ventricular injections of serum given at intervals of three or four days and repeated for a number of months.

A. G. MORPHY

SURGERY

Non-Spinal Psoas Abscess. Poar, Bennett and Nachlas. *Jour. of Bone and Joint Surgery*, July, 1923, v, No. 3, p. 590.

Psoas abscess may be developed from a source other than the vertebral column and this paper deals with 42 such cases. The anatomy of the psoas muscle is first described, and it is pointed out that the relationship of the retroperitoneal structures makes the psoas sheath the avenue of choice for extension of suppuration from these structures. It is also to be noticed that the lumbo-dorsal fascia thins out above at the level of the upper lumbar vertebrae, allowing easy entrance to pus, while below it becomes much thicker. The sources of non-spinal psoas abscess are manifold. Suppurative myositis of the posterior abdominal wall may be a cause, the result of metastatic infection or infected haematoma. Infections of the solid viscera, especially of the kidney in its lower pole, find but little fascial interference as gravity directs them to the psoas. Retroperitoneal infections originating in the hollow viscera are not uncommon, and often find their way into the wide end of the psoas tunnel. Infections of the internal genitalia, pleural em-

pyemata, primary gangrene of the retroperitoneal fat and suppurative lymphadenitis all furnish cases. Lumbar lymphadenitis is produced from many varying infections, abdominal, pelvic and even from the lower extremity. Lumbar lymphadenitis of tuberculous origin, without clinical evidence of visceral origin, is relatively so common as to deserve special mention. Cases of chronic sinus formation due to tuberculous lymphadenitis, but simulating Potts' disease are repeatedly seen. Repeated x-rays show no bony involvement, and the sinus usually clears up.

Symptomatology.—Complaints are of the leg drawing up or of limping, often with a history of injury suggesting infected haematoma. On the other hand there is a group of cases where the patient is brought in acutely ill, usually unable to walk, and with a history of prostatectomy, induced abortion or delivery, sometimes of gastro-intestinal disturbance or an abrasion of the leg. In such cases there is generally pain in the sacro-iliac region referred down the thigh to the knee with deformity of the hip.

Physical examination will show flexion deformity of the hip joint, limitations of hyperextension but freedom of movement in other directions, which excludes arthritis of hip. It is to be noted that in studying x-rays one must not be misled by the haziness of joints due to the superimposition of an abscess. Spinal conditions severe enough to produce a psoas abscess will produce much more limitation of motion than is found in cases of non-spinal psoas abscesses, and in the latter condition the x-rays will fail to reveal a bone lesion. The usual pelvic conditions are recognized without difficulty. Sacro-iliac arthritis will be accompanied by spinal limitation of motion and x-ray changes. Non-spinal psoas abscess is also confused with femoral hernia, tumour of the thigh, broad ligament abscess and sciatic neuritis. The treatment varies with the nature of the infection and the size and location of the abscess. When the abscess is superficial treatment is simple. When small it may be reached by puncture above the outer end of Poupart's ligament. When a free approach is indicated an incision is made over the iliac crest from the anterior superior spine backwards for 8 cm. The external and internal

oblique muscles and transversalis fascia are cut through and the peritoneum stripped forward to expose the psoas muscle. By this approach one may explore as high as the kidney. Drainage will follow in septic infection, closure in tuberculous lesions.

J. A. NUTTER

The Treatment of Chronic Bone Abscesses by Simple Evacuation Through a Small Drill Hole. Its Application in Non-sterile Abscesses. Brickner, Walter M. *Jour. of Bone and Joint Surgery*, July, 1923, v, No. 3, p. 492.

The writer has already described the treatment of chronic bone abscesses, cortical and medullary, by mere evacuation through a quarter-inch drill hole. Nothing is introduced into the bone when the pus is evacuated, neither probe, curette nor gauze packing. Both culture and smear are made from the pus in case the presence of many bacteria may make it desirable to open more widely. A drain is left in the wound down to but not into the bone, and the skin wound closed. Normally healing results in 8-10 days. This treatment is based on the conception that chronic bone abscesses tend to become sterile and afebrile. The writer now has evidence that complete sterility of the pus is not essential to the success of this method of treating chronic bone abscess. He cites one case in particular where there was a fusiform swelling of the right humerus in a young girl suspected of lues and running a temperature of 99°-100°, where even a neoplasm was simulated in the x-ray. In order to clear up the diagnosis a button of bone was removed revealing pus containing the staphylococcus aureus. The wound closed in a week. The diagnosis was circumscribed osteoperiostitis, probably metastatic from an old osteitis of several years previous. Hence the conclusion that even non-sterile bone abscesses may be treated by simple drainage.

J. A. NUTTER

Anthrax and its Treatment. Santee, E. *Annals of Surgery*, July, 1923, lxxviii, p. 326.

Thirty seven cases of anthrax are reviewed. Of these, eight cases were under the observation of the author. There were nineteen deaths. The etiology in thirteen cases was traced to the use of new shaving brushes. The

site of the lesion was practically always the face. Positive blood cultures were obtained in nine cases. Of these nine, eight died. The period in which septicaemia appears most likely to develop seems to be from forty-eight to ninety-six hours after the onset of symptoms. It is claimed that excision of the initial lesion may assist in the production of a septicaemia. Intensive serum treatment appears to offer the best prognosis. Sixteen cases in which the intensive serum treatment was used showed a mortality of 18.7%, in comparison with a mortality of 29.5% where excision plus the serum was carried out and 52.4% before the introduction of the serum treatment.

L. H. MCKIM

Contusion of the Hip. Ester, E. and H. *Revue d'Orthopedie*, July, 1923, x, No. 4.

This is a contribution in favour of the generally accepted opinion that contusion of the hip, of an extent sufficient to disable the patient for days or weeks, does not exist. In place of a contusion there is a fracture. The author goes on to quote from various authorities to the effect that a fractured neck of the femur may be concealed under the guise of a contusion, and that fractures of the bottom of the acetabulum are much more frequent than is generally supposed, being often overlooked and treated as contusions. Cases of so-called contusion of the hip of sufficient severity to warrant prolonged medical attention have always turned out to be fractures. A case is cited of a young lady of 22 whose hip had received a violent traumatism in a carriage accident. The diagnosis of contusion of the hip was made, and after eight days in bed she was ordered to walk. This she found herself able to do with the aid of a single cane. As the pains and stiffness persisted the writer was consulted a month after the accident. Examination showed good function, the patient walking almost without a limp and without a cane. Hip flexion was limited to right angles, while abduction and rotation was extremely restricted. There was slight tenderness over the hip joint, and 1 cm. of shortening, which had evidently been overlooked. The x-rays showed fracture of the acetabulum with penetration of the head a short distance into the pelvis. The writer points out that rectal examination helps but

little in such cases, the pelvic aspect of the acetabulum where tenderness would diagnose fracture being accessible to only the longest fingers.

J. A. NUTTER

The Treatment of Hallux Valgus by Oblique Dorso-Plantar Osteotomy. Allenbach, E. *Revue d'Orthopedie*, x, No. 4, July, 1923.

The writer points out that at the last meeting of the French Orthopaedic Society the opinion was almost unanimous that in cases of hallux valgus the operation of choice was that of resection of the head of the first metatarsal bone (an operation attributed by French surgeons to Reverdin). The writer stated that in certain cases, however, where the shortening of the long extensor of the great toe is considerable, and the hallux valgus deformity marked, a simple resection of the head may not, without removing much bone, effect a cure as satisfactorily as the operation he now brings forward. Also if much bone be removed the foot may suffer. This operation consists in first chiselling off the exostosis, and then doing an osteotomy by the electric saw from behind and below the metatarsal head obliquely upwards and backwards emerging on the dorsum near the base of the first metatarsal which is thus divided into two halves. The distal portion carrying the metatarsal head is now allowed to slide backwards, thus shortening the bone sufficiently to obtain correction of the valgus deformity, but retaining the metatarsophalangeal joint and above all the head of the first metatarsal. The tendon of the extensor proprius hallucis is thus satisfactorily lengthened. The bone fragments are sutured together using capsule and periosteum, by fine catgut, and in three weeks union is complete. A few days later the patient should be able to work. Results were excellent.

J. A. NUTTER

Cardiorrhaphy in Acute Injuries. Smith, W. R. *Annals of Surgery*, December, 1923, lxxviii, p. 696.

Smith reviews all published reports of wounds treated by operation appearing in the literature to date. He also reports two cases of his own, of which one recovered, the other died. In the case which recovered it was noteworthy that the symptoms from which the

patient suffered — unconsciousness, cyanosis, absence of radial pulse, cold extremities, and barely discernible heart sounds—were considerably improved as soon as the pericardium was opened, and the occluding clot removed. Consciousness returned and respirations improved at once. Ether was then administered. During the induction of anaesthesia the wound in the heart was blocked with the gloved finger. The pericardium was then opened widely in the vertical direction, and the apex of the heart grasped with an Allis clamp. By this means, the heart could readily be lifted up to the opening in the chest wall. Traction on the heart resulted in throwing the whole heart into fibrillation, from which it readily recovered to a normal rhythm with the release of the pull. The wound in the heart proved to be nearly three-quarters of an inch in length, and was situated in the upper portion of the right auricle. With the heart held in this way it was a very simple matter to suture the wound. This was done with a continuous suture of chromic cat gut, making five insertions. The sutures were placed through the entire thickness of the auricular wall. The pericardium was closed, and the chest closed without drainage.

During convalescence he received two transfusions. The hemothorax which developed, and which was present before operation, was aspirated, and at the end of the fourth week the left pleural sac was drained. The author places himself on record as holding the valve tube drain in high regard. A condom is used, and air and fluid can readily be expelled through the tube in the chest, but nothing can get back, for as soon as even the slightest suction is applied at the chest end, the thin walls fall together and occlude the opening of the tube. The second case was in extremis before operation, and died soon after the commencement of the operation.

The author summarizes his article as follows:

1.—Cardiorrhaphy is a comparatively recent advance in surgery.

2.—The human heart is very tolerant of manipulation. This fact has been repeatedly demonstrated, especially in connection with foreign body extractions during and since the World War.

3.—Surgical pneumothorax is remarkably well tolerated.

4.—The symptomatology of heart injuries varies widely, and as a consequence the diagnosis of this condition is often very difficult. In cases of doubt, therefore, exploratory operations are justifiable.

5.—Transpleural thoracotomy under general anaesthesia is probably the procedure best suited to the average case of this type.

6.—Drainage in these cases can be accomplished best through the medium of a simple valve tube drain through the chest wall.

F. B. GURD

Empyema of the Pleural Cavity. Heuer, George E. *Annals of Surgery*, December, 1923, lxxviii, p. 711.

The author states that an attempt must be made to meet certain conditions if we are to satisfactorily treat empyema. (1) Early recognition of the disease, whether we intend immediate surgical treatment or not; (2) Low mortality; (3) The prevention of chronicity; (4) The shortest possible convalescence; (5) The restoration of the functional capacity of the lung; (6) The certain cure of chronic empyema should it develop. The early diagnosis and institution of prompt treatment limits the development of serious complications, results in a lower mortality, and is the most important factor in avoiding chronic empyema.

All forms of examination must be carried out in order that complications, such as bronchopneumonia, bilateral empyema, lung abscess, pericarditis, peritonitis, etc., may be noted. The fluid should be examined to determine its character, and the type of micro-organism. The author is of the opinion that aspiration drainage has no disadvantage if done without the production of a pneumothorax and under a local anaesthesia over simple aspiration. He sees no reason for waiting for frank pus to develop if the fluid contains leukocytes or micro-organisms. In infants and young children he believes aspiration drainage to be the method of choice. He states that the disadvantage accompanying such a procedure is that fibrin clots when present cannot pass readily through the tube. He has not found this difficulty important. In adolescents and adults

where adhesions are present, rib resections may be performed. But if rib resection is performed, provision should be made for immediate continuous air-tight suction drainage.

The proper post-operative management with acute empyema is of great importance. Air-tight suction drainage, sterilization of the empyemic cavity, continuous hospital treatment until it has been proven that the empyemic cavity is obliterated, and proper pulmonary gymnastics will result in a lowered mortality, in a short convalescence, in a lessened tendency to chronicity and in less functional disability.

F. B. GURD

Fibro-Sarcoma of Tongue (*Un cas de fibrosarcome de la langue*). Brancati, R. *Tumori*, an IX, fasc. 3, 25 Decembre, 1922, page 356-362. (Translated from the French).

Brancati cites the work of Marion and the statistics of Milton-Foote, reporting a new observation seen in a young man seventeen years of age. The tumour, which was situated in the tip of the tongue was as large as an almond, bilobed, elastic and firm in consistency and was covered by normal mucous membrane, to which it was not adherent. The submaxillary glands though a little enlarged, did not have any features characteristic of new growth. The tumour had grown progressively during the previous six months. Brancati made a diagnosis of adenoma of the glands of Blandin-Nuhn. Removal was carried out through the tip of the tongue under local anaesthesia. On sectioning the tumour was found to be encapsulated and formed of white fasciculated tissue. Microscopic examination showed an exceedingly vascular tissue composed of numerous small bundles of fasciculated fibres, infiltrated with cells, the nuclei of which were very much elongated. Brancati, in view of this observation, describes the anatomical varieties of sarcoma of the tongue and cites another case of sarcoma of the tongue reported by Alois.

R. B. MALCOLM

Massive Sarcoma of Breast (*Volumineux sarcome du sein*). Lenormant and Moure. *Bulletins et Memoires de la Société anatomique de Paris*, tome XCIII, No. 2, séance du 24 Février, 1923, p. 176-180.

This condition was present in a woman of 52 years. She had noticed a small nodule in the inferior part of the breast, but as this had given rise to no symptoms she had paid no attention to it whatsoever. During the last six months this tumour had grown very rapidly, assuming enormous proportions as shown by two photographs. The clinical signs were those of the classical description of sarcoma of the breast: The skin of the breast was markedly thinned out, and in certain areas the tumour masses protruded almost through the skin. The consistency of the tumour was variable, and it was not adherent to the skin nor to the deep planes and there were no enlarged glands. In spite of the poor condition of the patient, as there were no signs of metastases, it was decided to remove the breast. This consisted of resection of the breast and both pectoral muscles, but no attempt was made to reunite the skin surfaces. Some months later the patient was found to be in excellent health. Histological examination of the tumour made by Cornil, showed the tumour to be a typical fibro-sarcoma.

R. B. MALCOLM

Discussion on Treatment of Acute Primary Infection of the Hand. Introductory Paper by D. P. D. Wilkie, F.R.C.S. Edin. *British Medical Journal*, Dec. 1st, 1923, page 1,025.

In discussing the anatomy of the hand the writer points out the important bearing it has on the course of the spread of infection. 1st.—The lymphatic network in the hand is very full and free, particularly on its palmar aspect, where lymphatic trunks come to the forearm mainly by way of the dorsum. 2nd.—The division of the cellular tissue into spaces by septa which tend to localize or guide the spread of infection; and the division of the palm of the hand into two spaces, the middle palmar and thenar space. A collection of pus situated deep in the palmar fascia and tendons and just in front of the interossei muscles, will point along the lumbrical muscles of the third, fourth and fifth digits. In the thenar space it will point to the radial side of the index finger. 3rd.—The anatomical arrangement of the tendon sheaths is such that an accumulation under tension in them will, besides endanger-

ing the vitality of the enclosed tendon, rupture into one of the palmar spaces, or in the case of the little finger and thumb, into the deep cellular plane of the forearm.

As to the type of infection there are two main types, lymphatic and suppurative; the latter subdivided into that involving cellular tissue, and that involving tendon sheaths. Infection may occur in any part, but there are two situations where it is specially liable to arise and where early recognition is particularly desirable. One is the tip of the finger, the other is the deep palm of the hand. Tendon sheath infection may begin as a primary infection from direct wounds, or as a complication of lymphatic infection of the finger, due to the rapid filling of the sheath with turbid fluid which later becomes pus. With the limited capacity for expansion, tension soon develops which compromises the vitality of the enclosed tendon. Early rupture may save the tendon.

Bone and joint infections are usually secondary; the most frequent examples are necrosis of the distal phalanx in finger pulp infections, and involvement of the 1st interphalangeal joint. In cellulitis or tendon sheath infection of a digit, early and accurate diagnosis is essential for rational and successful treatment.

In treatment the importance of prophylaxis in the shape of prompt antiseptic dressing of all wounds is stressed. For infection already established certain principles apply to infection of the hand. 1st.—Nature's effort to localize and restrict the spread of infection, must be aided and not combatted. 2nd.—When the products of bacterial activity and tissue cell death accumulate under tension, relief must be given by incision the earliest possible moment. 3rd.—When spreading suppuration is present large incisions allowing of free drainage will cause less disability than smaller incisions, with more protracted suppuration. 4th.—Rest to an inflamed part is an important factor in aiding speedy localization and resolution. 5th.—In a member such as the hand, function means mobility which in its turn depends on the smooth working of joints and gliding of tendons within their sheaths. Whilst the first principle in treatment will therefore be the rapid arrest and localization of infection, this must be effected with a minimum of inter-

ference with the subsequent mobility and functional usefulness of the hand.

W. W. RUDDICK

Metastatic Tumours of Bone. Joll, Cecil A. *British Medical Journal*, July, 1923, vol. xi, p. 38.

These tumours must arise in one of three ways: (1) By direct extension of a tumour outside the bone; (2) By extension through the blood stream; (3) By extension through lymphatic paths. Piney states it is impossible to demonstrate lymphatics in any part of the bone-marrow. The lymphatics reach only into the compact bone.

Von Recklinghausen was the first to suggest that metastases in bone resulted from the arrest of malignant emboli in the marrow blood capillaries. Hypernephromata may be seen growing into the renal vein. If there is any defect in interauricular septum of the heart they may pass directly into the systemic circulation. Otherwise they would be arrested in the pulmonary capillaries, grow into the smaller radicles of the pulmonary veins, and again become free as emboli. Schmidt has actually found these minute emboli in the interior of thrombi in the pulmonary arterioles. Piney contends that the immense widening of the blood-stream which occurs as we pass from the yellow to the red marrow causes a slowing of the stream, so facilitating the malignant cells to come to rest. A considerable quantity of red marrow persists in the upper ends of the humerus and femur. Throughout the fatty marrow minute foci of red marrow may be found. A large quantity of cellular marrow can also be found in the ribs, vertebrae, sternum, pelvis and skull bones, and smaller amounts in the clavicle and scapula. These are the common sites for bone metastases. The distal limb bones are comparatively free from red marrow. Exceptional sites of secondary deposits may be explained by irregularities in the distribution of the red marrow.

If the lymphatic permeation theory is accepted how is one to explain a femoral deposit from carcinoma of the tongue. The author examined the records of 1,144 autopsies at the Cancer Hospital from 1888 to 1922. This revealed the great frequency of bone metastases in breast carcinoma. It is not unusual in this

type of growth to find a fracture which has united. It also showed that squamous carcinoma (tongue, oesophagus, soft palate) has a tendency to produce secondary deposits. Growths in the thyroid are very prone to give rise to secondary growths in bone. In about 25% there may be no clinical enlargement of the thyroid. In a majority of cases the metastasis is slow in its growth and may be the sole metastasis present. Primary tumours of the prostate have the greatest tendency to produce secondary deposits in bones. The primary growth may be so small as to be overlooked during life. The secondary growth shows a remarkable amount of new bone formation. Specimens are also shown which originated in bladder, kidney, testis, female organs, tongue, oesophagus, colon, rectum, liver and vasopharynx.

Winkler refers to the tendency of adrenal neoplasms to remain for long periods symptomless, so that the metastases may be looked upon as primary lesions. The bones most commonly affected are vertebrae, ribs, sternum, femur, skull and humerus.

In making a diagnosis Delbet states that pain is an unusual symptom in secondary tumours of bone, while Elmslie maintains that early occurrence of pain is in favour of the tumour being metastatic. Secondary tumours affect the shaft more often than do primary tumours. Osteoplastic tendency shown by some metastases distinguishes them from most primary neoplasms. Spontaneous fracture in secondary tumours occur usually before any tumour is detected, while in primary growths the swelling may be detected before the fracture occurs. X-ray shows bone destruction and bone formation in the central shadow, in secondary growths.

GEO. A. FLEET

Retroperitoneal Tumours. Stratton, F. W. *Wisconsin Medical Journal*, vol. xxii, No. 6, November, 1923.

Two cases under the observation of the author are reported. The first occurred in a pregnant woman and was successfully removed three months after delivery. It weighed 9 $\frac{3}{4}$ pounds. The pathological report was fibromyxoma lipoma. The second case occurred in a male aged 61 years. A lump had been present in the abdomen for six years. On removal the

pathologist reported "Fibromyxoma becoming sarcomatous with areas of necrosis."

The literature of retroperitoneal tumours is reviewed: The most commonly found tumours are sarcoma, lipoma and fibromyxoma. Chondromatous lymphadenomata and neuromata are also reported as having occurred. Metastatic tumours are not considered. One hundred and forty-two cases of retroperitoneal sarcoma are quoted as reported. One series of 73 is quoted, 53 being operated upon. Of those 29 were sarcomatous, 18 were benign and 6 undetermined. Those not operated on were diagnosed as inoperable malignant growths. Lymphosarcoma is the most common and the most malignant. Spindle cell sarcoma is next in order. The large round or giant cell type is rare. Any of the benign varieties appear to be capable of undergoing sarcomatous change.

L. H. McKIM

The Treatment of Haemorrhoids by Interstitial Injections. Dunbar, John. *British Medical Journal*, Nov. 3, 1923, p. 808.

Some observations and conclusions are drawn from a series of 150 cases treated in the Royal and Western Infirmaries, Glasgow. The treatment consisted in the injection into the pile of ten per cent. carbolic acid in liquid extract of hamamelis. The cases were not selected, all degrees of haemorrhoids were treated. The class of patient was chiefly the manual worker.

The ages varied from 21 to 70 years. The number of injections required did not appear to depend on the age of the patient or the duration of the complaint, as seven injections were required for one whose complaint had lasted only one year, and only five for another of fifteen years' duration. The larger the pile the fewer the injections. Bleeding usually stopped after the first injection. Injections were not given in the presence of inflammation. Only four cases had to discontinue work, and these only for two days, three days, one week and two weeks respectively. These were cases with marked prolapse and the writer in such cases now injects one pile at a time and uses a gauze pack in the anus with a large external pad held firmly by a perineal bandage. Injections were given at intervals of one week. Average length of treatment was five weeks. There have been no complications.

Patients should be thoroughly examined before submitting them to treatment. Bright's disease, diabetes, pernicious anaemia, advanced cardiac disease, hemiplegia and epilepsy are all contra-indications. The advantages are that it is painless; no anaesthetic is required; and the treatment can be carried through without the patient being incapacitated. More recently the writer has employed 30% sodium salicylate with equally good results except that the patients complain of more pain following the injections.

A. ROSS

Dental Impactions and their Sequelae.—The majority of impacted teeth cause no pathologic changes or symptoms that can be detected by clinical or roentgenographic examination. E. F. Tholen, Los Angeles, reports a series of eighty-four cases which gave rise to numerous serious and puzzling conditions that required the removal of the teeth and of the pathologic reactions to which they gave rise. In forty-eight of these cases the conditions were due to infection; in twenty-three, the symptoms could best be explained by the theory of reflex disturbances due to nerve pressure. In thirteen cases, the patients were seen because of post-operative complications. In the group of forty-eight cases there were nine in which local infection of the overhanging soft tissue or gingival involvements resulted in osteomyelitis,

periostitis and necrosis. In one of these there was a temporal abscess that was cured by free drainage, and another resulted in infection of the temporomandibular joint, with necrosis of the temporal bone. This case terminated fatally. In thirty-five instances there were evidences of rarefaction of bone about the teeth, and the patients were referred because of some general infection. This included arthritis, neuritis, iritis, gastric lesions and asthenia. In two cases in which maxillary sinusitis complicated upper third molar impactions, lodged high in the antrum wall, the removal of the teeth and intranasal drainage of the antrums effected a cure. One patient with chronic lymphadenitis of the right submaxillary group was cured by the removal of an impacted lower third molar.—*Jour. Am. Med. Ass.*, Nov. 17, 1923.

Medical Societies

THE TREATMENT OF TUBERCULOSIS OF THE CERVICAL GLANDS (B. M. A.)

This is a paper and open discussion on a disease which, as the writer remarks, is of very frequent occurrence and yet is notable for the lack of unanimous opinion in its treatment. This particular method of approaching it, therefore, is of value, because it brings together many shades of opinion and allows for a possible grouping of methods.

He holds that the essential point is to know when to advise the various methods of dealing with tuberculous adenitis; when to operate and when to withhold operation; whether to merely incise and drain, or to curette, or to remove neighbouring glands. His remarks are based on an experience with some 2,000 gland cases, during the past ten years.

In discussing the clinico-pathological history of the disease, a distinction is made between infection of glands with tuberculosis brought via the blood, and infection spread by lymphatics from a local focus. Two methods may be used to distinguish between these two types. Clinically, he depends upon the distribution of the diseased glands; if they occur in scattered areas, not connected by lymphatics, it is suggestive of a blood infection, while in the case of the disease spreading from one gland to others in the immediate neighbourhood, a lymphatic infection is suggested. This is particularly noticeable when the glands are in lymphatic connection with such an absorptive area as the tonsil. Pathologically, he finds an indication of the channel of infection in the appearance of the diseased gland, in the early stages. In the blood infected glands sectioning shows the disease to lie mainly in the centre of the gland, but in the lymphatic type the disease is seen to lie chiefly in the periphery, close to the capsule, what he calls the "corridor of the gland."

In the cervical adenitis of children he thinks that over 90% have been infected by the lymphatic route, and it is with this common type that his paper deals. Proportionately, the tonsils were found to be the chief focus of absorp-

tion, with the adenoids and carious teeth the next in order of frequency. He insists that this adenitis is, for a time, a local manifestation of a local infection, and, for a time, it is the only manifestation. This is a striking peculiarity. Adenitis of this nature, therefore, must not be compared in its early stages with such forms of tuberculosis as is found in bones, peritoneum or lungs. There is probably, a considerable period between the development of the adenitis and the infection of the blood stream. The importance of this point lies in the fact that the adenitis while thus localized, represents a purely tuberculous infection, with none of the mixed infection found in, say, pulmonary tuberculosis. Unwise operative interference may be responsible for introducing other infective organisms. It was his experience that the disease made rapid headway in children who contracted it during their first year.

In the matter of prevention he lays particular stress on the sterilization of milk and the keeping of children away from cases of open tuberculosis. He could lay down no hard and fast rules as regards the conservative non-operative method of treatment. It is significant how often the exanthemata are followed by the appearance of enlarged tuberculous glands, and, also, how often living tubercle bacilli have been found in glands treated for a long time by the conservative method. Is the patient to expect a complete cure by this method, or only a localization of the disease, with a possibility of its again becoming active? After all, this method relies mainly on the local reactions and stimulation of the body resistance, a consideration of some weight in favour of early removal of infected areas. Much depends on this being done early, and also, in a thorough manner. Incision and scraping he thinks are insufficient, if not mischievous. He has removed the glands in 1,428 cases; in only 17 of these was a minor secondary operation necessary, and the mortality was less than one per cent.

But there are contra-indications to operation, where, *e.g.*, the distribution of the glandular disease is haphazard and suggestive of a blood-borne infection; in the fibrous type; and cases

in which glands have already been incised and everted; where there is periadenitis this must first be reduced; operation is hazardous in the first year of life. X-ray treatment should follow operation in the lymphoid type. In conservative treatment the writer relies on general hygienic measures, Moro's ointment externally, Béraneck's tuberculin, and, in the lymphoid type, x-ray.

Amongst the points brought out in the discussion of this paper were, the advisability of removing glands while they were still freely movable; that x-ray treatment was often in judiciously applied, causing a fibrosis which greatly increased the difficulty of operating; that removal of glands at the earliest possible age was best. Heliotherapy was mentioned as of great value. Aspiration was shown by statistics to be unsatisfactory in a large percentage of cases.

H. E. M.

MENTAL DEFICIENCY IN ITS SOCIAL ASPECTS (B. M. A.)

At the ninety-first annual meeting of the British Medical Association held at Portsmouth, July, 1923, there was considerable discussion in the section of Medical Sociology on Mental Deficiency in its Social Aspects.

Dr. William A. Potts of Birmingham, read a paper on the general aspects of mental deficiency in which he showed that there was a close relationship between mental defect and other problems such as venereal disease, chronic drunkenness, illegitimacy, delinquent and criminals, the unemployed, war pensions and shell-shock cases. In venereal disease mental defectives constitute one of the great difficulties, for they neither protect themselves against disease, nor realize the importance of treatment, especially of continuing it until the disease is cured. He pointed out how the detection of such people among criminals and delinquents would aid the judicial authorities in solving many problems. He attached great importance to the ante-natal clinic and the school clinic, in the detection and supervision of mental defectives.

Dr. Henry Devine of Portsmouth discussed the Segregation of Mental Defectives. He pointed out how the most serious social prob-

lem was that presented by the high-grade cases and not by the idiot or imbecile who were usually harmless and unlikely to propagate. The sociological reasons for placing feeble-minded in institutions, he included under two headings:

1.—The prevention of delinquency, vagrancy, prostitution, etc.

2.—The prevention of propagation by persons who will probably produce inferior children.

At the present moment he would segregate morons (children and adults) who give trouble to the community, *i.e.*, those with intellectual weakness plus bad behaviour. In conclusion he stated that by segregation of the mentally deficient we remove a large number of persons who are a potential or actual menace to the community; and by so doing we prevent in some degree the propagation of the unfit. There remain, however, a large number of mentally unstable and intellectually deficient people who for various reasons cannot be segregated. We can do much for such individuals by supervision from childhood onwards, by extending our social welfare organizations, by finding work fitted to their abilities, by protecting them from adverse influences, etc.

Dr. R. A. Gibbons read a paper on Sterilization of Mental Defectives in which he stated that any child who had been given every available form of treatment but was still mentally defective at the age of sixteen should be sterilized, and that every mentally defective adult should be sterilized before being allowed to marry.

Dr. W. N. East of Brixton Prison in his paper on The Incidence of Crime and Mental Defect did not agree with the statements of certain American authors that the majority of prisoners are insane, defective or psychopathic, especially as regards England and Wales. He said that during the year 1921-22, of 66,715 prisoners 223 were certified as mental defectives. In the year 1922-23 of some 60,983 prisoners the number of defectives were 246.

Dr. C. Macfie Campbell of Boston, in discussing organization for the Supervision of Mental Defectives pointed out that if these persons had certain tendencies so had we. By the time such an individual had had several experiences with the courts he became a con-

firmed criminal, but this later career of his was along the grooves which had been determined by the social management of the case, not by the original endowment of the child. He also said that one must not be alarmed by the numbers of these people. It sounded a dreadful thing that one in some 250 of the population should be a mentally deficient person. It was an appalling thing in bulk, but if it were put the other way round he was sure it would not appear so formidable. Here were 250 normal persons charged collectively with the case of just one unfortunate individual.

In the general discussion sterilization of mental defectives was not considered practicable. Even if one of these persons was sterilized it would not prevent the spread of venereal disease or the growth of criminalistic tendencies. Special instruction in childhood and segregation were considered the best methods for treating these persons. As regards special instruction it was pointed out that every precaution should be taken to prevent the clogging of special classes in schools with feeble-minded who should really be in institutions.

SEMI-ANNUAL BUSINESS MEETING OF THE ONTARIO MEDICAL ASSOCIATION

The Semi-Annual Business Meeting of the Ontario Medical Association was held at the Academy of Medicine, Toronto, on Thursday, December 13th, 1923. There was a very good attendance representing most of the Counties of the Province. The President, Dr. Argus, after briefly welcoming the members, turned the meeting over to Dr. Geo. S. Young of Toronto, first vice-president of the association, and chairman of the Committee on General Purposes. The chief items of business dealt with are as follows:—

Sanction was given to the Committee on Inter-Relations to proceed with their plan calculated to enlighten the public on the work of the profession. This plan provides for the presentation of addresses to public meetings by members of our profession well qualified to speak on the various topics of interest. It is hoped that, during the coming winter, some progress will be made in connection with this work.

It was decided to continue to pay the expenses and the usual honorarium of \$10.00 to post graduate speakers to the number of eight, visiting each affiliated society during the course of the year. The central office records show that 670 addresses, demonstrations, etc., have been given under the auspices of the Ontario Medical Association to Country Societies and District Meetings in the course of the last two and a half years.

In connection with the Insulin Clinics conducted by the Department of Medicine of the University of Toronto at the Toronto General Hospital, arrangements were carried out by your association to bring in over 800 practitioners to attend these clinics.

The following resolution in reference to membership fees in the Association was unanimously adopted:—"That the fee for membership in the Ontario Medical Association shall be \$2.00 for the first calendar year after graduation; \$5.00 for the second calendar year after graduation; and the full fee thereafter."

Possibly the most important business dealt with by the meeting was that pertaining to medical legislation. The report of the Committee on Legislation and By-Laws presented by its able chairman, Dr. John Ferguson of Toronto, brought out the following important facts:—The recent amendments to the Medical Act adopted at the last session of the Provincial Legislature have accomplished several important things, namely, defining the "Practice of Medicine," placing the onus of prosecution on the Crown, and shutting the doors against further influx of irregular practitioners into this province. The Committee urges that the profession carefully watch the result of this legislation, and again be prepared to go to the Legislature as a united body, demanding that the standards for all who would undertake to treat the sick in this province be raised to a level which will adequately protect the health of the citizens.

The meeting expressed its desire to again co-operate with the universities and the College of Physicians and Surgeons through the Joint Advisory Committee which did such excellent work during the past year in representing the views of the entire profession before the legislature.

Mercurochrome-220 Soluble as a Valuable Adjuvant to the Silver Compounds.—The clinical value of mercurochrome-220 soluble in the treatment of gonorrhoea in men and women was studied by William von Lackum and Benjamin H. Hager, Rochester, Minn., in a series of cases and they outline their method of procedure in each stage or period of the disease. The results have been very satisfactory. From the standpoint of shortening the course of the disease, preventing complications, and freeing

the host from gonococci, the treatment has proved very satisfactory. Mercurochrome is not put forward by the authors as a panacea for all infections of the genitalia; nevertheless, they feel that their experience warrants the conclusion that, in the armamentarium of urinary antiseptics, mercurochrome, when properly used, is a valuable adjunct to the commonsense treatment of gonorrhoea and its complications.—*Jour. Am. Med. Ass.*, Dec. 15, 1923.

Obituary

Lieut.-Col. (Dr.) J. Stuart Carruthers, son of the Rev. Dr. and Mrs. Carruthers of Westminster Hall and the West Point Grey Presbyterian Church, died from pneumonia at the Vancouver General Hospital on the 2nd of January after a very brief illness and within a few hours of his forty-third birthday. The late Col. Carruthers had a notable war career. Graduating in 1904 from Queen's University, he was immediately appointed to the Carleton County Hospital at Ottawa. Afterwards he moved to Halifax, where he practised for a considerable time, and where he married the daughter of the late Senator A. B. Crosby in 1909. On the outbreak of the war he joined up as a medical officer of the New Brunswick regiment, afterwards transferring to the heavy artillery. On reaching England was appointed Assistant Director of Medical Services at Bramshott, and assisted in the re-organization of the Canadian Medical Services. While in England Mrs. Carruthers became ill and returned to Halifax, dying shortly after her arrival there. Following her death, Col. Carruthers reverted to the rank of major and went overseas to the 1st Canadian Division, being afterwards transferred to the 3rd Division where he served with a Field Ambulance. During this time he was one of a party of medical men blown up when the ambulance they were working in was destroyed by a shell, and suffering severely from concussion and shell-shock he was invalided to England. Coming out of hospital he was promoted to the rank of Lieut.-Colonel again and placed in command of a hospital ship with which he was serving when the armistice was signed. Following his discharge from the army, Col. Carruthers came to Vancouver, but his health not permitting him to remain here, he took an appointment at the hospital at Campbell River and afterwards moved to Bella Coola. Two children, Stuart, aged 7, and Isobel, aged 12, are in Vancouver with Mrs. R. L. Fraser, a sister of the deceased. Both parents also survive, the family residence being at 2850 Point Grey Road. The late Col. Carruthers was a prominent Mason.

Dr. C. K. Clarke. The medical profession has suffered a great loss in the death of Dr. Charles Kirk Clarke. He died in Toronto on January 20th., 1924, at the age of sixty-seven. For nine weeks he had been confined to bed with a heart condition.

Dr. Clarke graduated in medicine at the University of Toronto, in 1878, and received the honorary degree of LL.D. from Queen's University, Kingston, in 1906.

Dr. Clarke was a recognized leader in psychiatry. Last May he was selected by the British Medico-Psychological Association to deliver the Maudsley Lecture on Psychiatry in London, England—the first occasion such an honour has been conferred on a Canadian. He was one of the editors of the *American Journal of Insanity* and held many important posts with distinction. He was Superintendent of the Rockwood Hospital for the Insane (Kingston) 1885-1905; Superintendent of the Toronto Hospital for the Insane, 1905-1911; Medical Superintendent of the Toronto General Hospital, 1911-1918; Dean of the Faculty of Medicine, University of Toronto, 1908-1920. At the time of his death, he was Professor of Psychiatry, University of Toronto, and Medical Director of the Canadian National Committee for Mental Hygiene.

Canadian Psychiatry owes much to Dr. Clarke. He was one of the first advocates of occupational therapy in mental hospitals. He was a pioneer in advocating and practising methods of non restraint in dealing with the insane. He established one of the first training schools

for mental hospital nurses. Through the Canadian National Committee for Mental Hygiene he stimulated Mental Hygiene progress throughout the length and breadth of the Dominion.

Although Dr. C. K. Clarke was an authority of continental reputation on the subject of mental diseases, he was many sided. He was fond of athletics, and an accomplished musician. As a naturalist he was an authority on birds. He was also an educational reformer, and had an extensive knowledge of early Canadian literature. Sir Robert Falconer, President of the University of Toronto, summed up Dr. Clarke's outstanding merits when at the public funeral held in Convocation Hall, he said—"Dr. Clarke was one of the best men I ever knew."

Dr. Luther Emmett Holt, well known to the profession throughout Canada as the author of the work on "Diseases of Infancy and Childhood," died January 14th, 1924, in Pekin, China, while engaged in establishing a department of pediatrics in that university. He was born on March 4th, 1855, and he was, therefore, in his 69th year at the time of his death. He received his degree of B.A. from the University of Rochester, and three years later was graduated from the College of Physicians and Surgeons, of Columbia University. After several years of practice he was appointed professor of children's diseases at the New York Polyclinic Hospital, and was at a later date named to fill the professorship of pediatrics in his *alma mater*, a post which he held for twenty years. It was owing to his exertions that the Baby's Hospital of New York was built, a hospital in which for many years he served as physician-in-chief. More recently he was appointed secretary and a director of the Rockefeller Institute of Medical Research. Through his many works on the home care, feeding and treatment of children, Dr. Holt was widely known throughout the length and breadth of the American continent, and his contributions to medical journals are regarded as standards in pediatrics by medical men the world over. It was characteristic of the late Dr. Holt to be almost boyishly enthusiastic about any new experience. It was, therefore, with the keenest delight that he accepted this opportunity of a trip to China, particularly as it was to be on so interesting a mission. It was also hoped that the rest afforded by the voyage and the comparative relaxation from work which this mission would afford him would have done much towards relieving the frequent attacks of cardiac dyspnoea from which he had for some years suffered, and which unfortunately were the direct cause of his death. Dr. Holt will always be regarded as one of the fathers of paediatrics. All those who knew him, both his students and his *confrères*, were impressed by his energy and his keenness. He was a tireless worker, with great nervous force within a small frame. As a teacher he was unequalled. His faculty for making the simplest facts fascinatingly interesting and the most ordinary case a text for a most illuminating discourse was always a source of amazement to those who were working with him. We know of no other man who has had so great an influence in advancing our knowledge of the subject of the diseases of children and impressing upon the profession throughout America the importance of this department of general medicine.

His wife was with him at the time of his death, and he leaves behind him four children, three sons and one daughter. Dr. Holt was a member of the American Association of Physicians, and was an original member of the American Paediatric Society. A. G.

Dr. Thomas Bernard Davies died suddenly in the Hospital at Hull, Que. He was one of the best known medical practitioners of the Gatineau Valley, coroner for Hull and district for the past seven years, and a kindly wholesouled gentleman, who was beloved by all who knew him. During his forty years in the medical profession he had earned for himself the reputation of being an able physician, and had a lucrative practice.

Dr. Alfred Marcil, a well-known Montreal physician, died recently at his home, 783 St. Denis St., after an illness of three days. Dr. Marcil suffered from angina pectoris, but kept to his work, visiting his patients up to the last. Dr. Marcil was 56 years of age.

Dr. F. A. Routledge died at Lambeth on January the 3rd. Born in Lambeth in 1885; he was a graduate

in homeopathy in 1875, and of Trinity College Faculty in 1877. Dr. Routledge had been medical health officer for Middlesex, and was associate coroner of the county; he was at one time president of the Ontario College of Surgeons.

Dr. George Perry Sylvester died in Toronto in his 71st year. A graduate of Trinity Medical College in 1874, he practiced in Galt for twenty years, moving to Toronto in 1894. He was one of the best known of the staff in Grace Hospital, where he had been in attendance for the last twenty years.

Dr. Alexander McKillop was found dead in his office on December the 17th, 1923.

Dr. W. N. Saulter, one of the coroners of Carlton county died in Ottawa on December the 14th, 1923.

The Treatment of Neurosyphilis.—The problem of the treatment of neurosyphilis according to H. C. Solomon, Boston, is to destroy the spirochetes that are present in the nervous system. The nervous tissue is walled off from the general body structures, and this leads to a relative impermeability of drugs placed in the general circulation. However, some penetration takes place, the amount apparently varying in different individuals. There is a group of neurosyphilitic cases that react well to mild systemic treatment. Others require more intensive systemic treatment. There are many, however, that are not improved to any extent by systemic treatment with arsphenamin, mercury or iodid. Some of these cases do well, however, when medicaments are given directly into the cerebrospinal fluid or when spinal drainage is used. Theoretically and practically, it seems advisable to place the medicament as near to the site of pathologic change as possible, utilizing the lumbar subarachnoid space, the region of the cisterna magna and the ventricles as conditions indicate. No definite rules can be laid down as to which type of treatment will produce the best results in a given case. A classification based on the reaction to treatment does not coincide with the older ideas of tertiary syphilis of the nervous system as contrasted with parasyphilis, because some cases of tabes and paresis react quite well to relatively mild systemic treatment, whereas some cases of the meningovascular group do poorly on the same type of therapy. It is more difficult, on the whole, to get satisfactory results

in cases of tabes and general paralysis than in the meningovascular type, and the former usually require quite intensive treatment, making use of the cerebrospinal fluid pathway. There still remains a group of cases than cannot be satisfactorily modified by treatment with arsphenamin, mercury, the iodids and blood serum. The immunity of the patient plays a large rôle in the results obtained, and various procedures that may increase the immunity responses have a place in the treatment of neurosyphilis. Of great importance are all hygienic procedures that improve the general condition of the patient. Some favourable reports have been made from inducing febrile reactions by inoculations with malaria and relapsing fever. The hope for the future rests either in the method of inducing greater immunity on the part of the patient or in developing drugs with greater power of permeation into the nervous tissue.—*Jour. Am. Med. Ass.*, Nov. 24, 1923.

The Etiology of Iritis.—The infections found by Ernest E. Irons and E. V. L. Brown, Chicago, in two hundred cases of iritis were as follows: syphilis, alone, 12 cases; with other infections, 26 cases; gonococcal infection, 10 cases; tuberculosis, 8 cases; dental infection, 27 cases; tonsillar infection, 53 cases; sinus infection, 4 cases; genito-urinary, nonvenereal, 6 cases; other infections, 3 cases; no infection found, 3 cases; combined infections, 41 cases; and undetermined, 7 cases.—*Jour. Am. Med. Ass.*, Nov. 24, 1923.

News Items

GENERAL

ACTIVITIES OF THE LEGISLATIVE BUREAU OF
THE CANADIAN MEDICAL ASSOCIATION

The Committee in charge of the Legislative Bureau of the Canadian Medical Association, in their last annual report (see issue of September, 1923, of the *Journal*), endeavour to indicate its future scope and usefulness in matters of legislation which affect the entire profession throughout Canada, and as a clearing house for information accumulated from each of the provinces.

This year the Committee has been requested to report on, (1) the desirability of the appointment of License Inspectors; (2) Motor Markers of a suitable design and permanent nature, and (3) Group Insurance. Should any of the members have any suggestions bearing on these special questions or other matters they are invited to send them in immediately to the General Secretary.

This Committee will be called to meet in Ottawa about March first.

The Eighth Annual Clinical Session of the American Congress on Internal Medicine will be held in the wards and laboratories of the various institutions concerned with medical teaching, in St. Louis, beginning Monday, February 18th, 1924. Practitioners and laboratory workers interested in the progress of scientific, clinical and research medicine are invited to take advantage of the opportunities afforded by this session.

Inquiries regarding it may be addressed to:—Elsworth S. Smith, President, St. Louis, Mo.

We are pleased to note that the report of the British Medical Research Council for 1922-23 describes the discovery of insulin as the most conspicuous medical event of the year, and states that the public has suddenly become aware of the fact that miracles are daily being achieved by means of it. Sufferers who are carried to hospitals actually dying from diabetes are now resuscitated as if by some magic, and brought back almost immediately to normal life.

The fact that the discovery of insulin was the outcome of a long series of experiments on animals is dwelt upon in the report, in which it is stated that every batch of insulin manufactured must be tested upon animals. Dogs in the first place rendered this great service to mankind; a service now rendered by other animals smaller than dogs. British production of insulin, the report states, is now enough not only to meet the whole home demand, but also to allow of a growing export to other parts of the Empire, and to foreign countries. The report also states that high authorities have stated that it is their opinion that the production of insulin will eventually be found to prove of greater value to the science of medicine as an example of research work in physiology and biochemistry than in its immediate application to the relief of diabetes.

NOVA SCOTIA

The new cottage hospital at Inverness was opened recently by the Hon. E. H. Armstrong, prime minister of Nova Scotia.

Plans have been prepared for a new asylum for the chronic insane of Halifax County, the cost of which is estimated at \$200,000. The new building is to be located at Windsor Junction.

Dr. W. H. Chase has returned to Halifax after a period of study abroad, and is now associated in clinical laboratory work with Dr. V. N. MacKay.

Professor E. Gordon Young, formerly of the University of Western Ontario, has taken on duty as Professor of Biochemistry at Dalhousie University.

At a meeting of the Halifax Branch of the Medical Society of Nova Scotia on the fourteenth of December, the motion picture film illustrating the South American trip of the American College of Surgeons was shown by the courtesy of Dr. J. G. MacDougall, vice-president of

the college. Racy comment by Dr. MacDougall, as the film was being screened, added greatly to the enjoyment of the evening.

A summary of the vital statistics of Nova Scotia for the month of August recently issued by the Department of the Public Health, indicated a general death rate for the month of approximately 10.7, and an infant mortality rate of approximately 78.5. The specific death rate from tuberculosis (all forms) is approximately 112.

Dr. J. F. Ellis, formerly Medical Director, "B" unit, D.S.C.R., has been transferred to Ottawa, where he now occupies a seat on the Board of Pension Commissioners. Dr. M. A. MacAulay succeeds Dr. Ellis as Medical Director of "B" unit, while Dr. O. G. Donovan succeeds Dr. MacAulay as superintendent of Camp Hill Hospital (D.S.C.R.).

Dr. J. G. D. Campbell, of Halifax, is convalescing slowly from a very serious illness.

QUEBEC

THE LADY BYNG OF VIMY FUND FOR MENTAL
HYGIENE

The Lady Byng of Vimy Fund for Mental Hygiene was launched at a public meeting held in Montreal on January 15th. Dr. Chas. F. Martin, President of

the Canadian National Committee for Mental Hygiene, said that the Fund would be utilized for the following purposes: "(1). The stimulation of mental hygiene activities among children for the purpose of preventing insanity, controlling feeble-mindedness and treating nervous conditions. This work will be cen-

tred particularly in the primary schools, juvenile courts and reformatories of the Dominion. (2). Organization of a department of mental hygiene research for the stimulation of scientific activities in the mental hospitals of the country. (3). Co-operation with government and officials in improving and enlarging facilities for the treatment of insanity, feeble-mindedness and nervous conditions, together with the carrying on of useful activities that have been initiated by the National Committee."

His Excellency the Governor General spoke earnestly about the need of dealing intelligently and energetically with the whole problem of mental abnormality. He said that Her Excellency the Lady Byng of Vimy had identified herself with the Fund that bears her name because of an intense interest in this phase of public health. The Governor-General said: "This question of mental hygiene is one of the keenest things Her Excellency takes up. She is interested because she has seen a state of affairs in the Old Country that she desires to prevent in Canada. Now is the time to put the Dominion on its feet in this regard. Everyone can help by forming a body of public opinion, and public opinion can work anything in any place."

Sir Vincent Meredith emphasized the need for the prevention and cure of mental abnormality, and paid tribute to the Lady Byng of Vimy for making possible the inauguration of a national Fund. Sir Arthur Currie emphasized the need for research in Mental Hygiene and said that he was glad that the fund would assist this necessary object. Mr. E. W. Beatty endorsed the Fund project because it would lead to the improvement of mental health throughout the country. The Right Honorable Mackenzie King wired his best wishes for the success of the enterprise. Premier L. A. Taschereau of Quebec communicated that he hoped that public spirited citizens would subscribe liberally to the Fund, and stated his conviction that Her Excellency had associated her name with a worthy humanitarian endeavour. The Honorable Dr. H. S. Beland and Sir George Burn were also desirous of the success of the Fund. Dr. C. K. Russel of Montreal told of the accomplishments of the National Committee and stated that the scope of activities could be enlarged through the financial assistance of the Lady Byng of Vimy Fund.

Dr. C. M. Hincks, Secretary of the Canadian National Committee for Mental Hygiene intimated that generous support had already been granted to start the Fund on its way. He predicted that the response throughout Canada would be liberal.

AMALGAMATION OF THE MONTREAL GENERAL AND WESTERN HOSPITALS

Negotiations looking to the amalgamation of the above named hospitals have been carried on from time to time for the past three years. For various reasons the completion of the arrangements has been postponed, but finally the bill incorporating the amalgamated institution under the name of "The Montreal General Hospital" has been signed by the Lieutenant-Governor in Council naming January 1, 1924, as the date upon which the act should become effective.

A general meeting of the Governors was called for January 16th, for the purpose of electing officers and a Board of Management. There were about a hundred governors present and the election results are as follows:

President, Lieut.-Col. Herbert Molson, C.M.G., past-president of the former Montreal General Hospital; Vice-Presidents, John C. Newman, past-president of the former Western Hospital, and A. E. Ogilvie;

Treasurer, J. I. McCall; Secretary, Dr. A. T. Bazin.

Board of Management: For a term of one year from the first annual general meeting, Robert Adair, D. A. Campbell, Lt.-Col. G. R. Hooper, C. E. Neill, Senator Smeaton White.

For a term of two years from the first annual general meeting, J. S. Brierley, J. R. Cowans, A. D. MacTier, W. J. Morrice, J. W. Pike.

For a term of three years from the first annual general meeting, George Hogg, C. W. Lindsay, J. W. McConnell, J. J. McGill, Ross H. Macmaster.

The meeting formulated and passed a Bylaw constituting an Advisory Board and the following gentlemen were elected thereto:

Lord Athelston, G. W. Beatty, K.C., A. J. Brown, K.C., C. B. Fraser, Wm. McMaster, Hugh Paton, Farquhar Robertson, Dr. F. G. Shepherd, Senator Lorne Webster.

This Advisory Board was created in order to retain the counsel and active interest of a group of men who had formerly served on the Boards of Management of the two hospitals, which latter body is now limited in number to fifteen.

Medical men from all parts of the American continent met in Montreal recently for the international convention of the Alpha Kappa Kappa Fraternity. It is a noble ideal that there should be no boundaries in science and that the whole world should be within the ambit of the medical profession. The programme for the convention included tours of the various hospitals of the city and the holding of special clinics. The Alpha Delta Chapter of McGill University acted as hosts on this occasion. The Alpha Kappa Kappa Fraternity was established at Dartmouth University in 1889, and has since grown to be practically the largest exclusively medical organization of its kind in the world. About 10,000 members of the fraternity are now engaged in medical work under every flag, and among them are numbered some of the most prominent practitioners and teachers of to-day. The McGill chapter was instituted in 1904, and is one of two chapters of this fraternity in Canada, the other being at the University of Toronto. The members at present in Montreal, including honoraries and alumni, number about eighty.

The Tuberculosis Sanitarium at Ste. Agathe will probably not be ready for the reception of patients until May, it was stated by Dr. A. H. Desloges, Director of Medical Institutions for the Province of Quebec. The Sanitarium will be taken over by the Provincial Government this month, and arrangements will be made for alterations and renovations through the Department of Public Works. Persons suffering from tuberculosis will not be admitted to the Sanitarium indiscriminately, but every effort will be made to select persons who will benefit from the treatment and who now constitute a menace to those at home, explained Dr. Desloges. To carry on battle against the disease the Provincial Board of Health will have by the end of 1924, twenty-four organized dispensaries which will act as educational centres and clearing houses for patients suffering from this disease. The more important of these dispensaries will be established in Three Rivers, Thetford Mines, Victoriaville, Hull and Fraserville.

Important changes in the medical staff of the St. Michel Asylum, forecast several months ago, are taking place. Dr. D. Brochu, superintendent, and Dr. A. Marois, assistant superintendent, are severing their connection with that institution and purpose devoting all their time to their personal clientele. Dr. Delphis

Roy has been appointed superintendent of the asylum, in succession to Dr. M. D. Brochu. He will devote his attention chiefly to the scientific side of the asylum and will continue his special courses on mental diseases

at Laval. Four French experts are to be attached to the institution in a few months and closer connections are expected between Laval and the asylum than in the past. G. H.

ONTARIO

THE MEDICAL RESEARCH INSTITUTE IN HAMILTON

In May, 1920, Mr. F. F. Dalley donated \$10,000 for the purpose of adding to the facilities of the General Hospital in Hamilton. This fund was placed under the control of a Board of Trustees. A charter was obtained and the fund was devoted to the establishment of a laboratory of Medical Research. Goitre being so prevalent in the district the study of problems connected with it was selected as the first object on which to begin work. Since its institution over 900 metabolism tests have been made on more than 600 patients. This work has been of great value to the local physicians and such patients who have come under their care. We wish the Institution every success.

The hospitals of Ontario met and formed an association in Toronto on December the 13th, 1923. The opinion of the meeting on one point is of interest in that they declared the standardization of hospitals asked for by the American College of Surgeons was not feasible in Ontario. Dr. Ryan of Kingston urged that Ontario should stand on her own feet in providing a standardization of her own. The association is to be known as the Ontario Hospital Association, with its president Colonel William Gartshore of London, and 1st vice-president Mrs. H. M. Bowman of the Women's College Hospital of Toronto. The aiding of the many small hospitals in Ontario is to be an important part of the organization.

We are glad to notice a very complimentary reference made to the way in which public health service in Oshawa is being carried on at the present. The local journal refers to the wide range of activities carried on by the department, and states that the doctor and the nurses are rendering a service to the community especially among the poor, the value of which cannot be estimated from a monetary standpoint. More than 4,700 visits were made by the nurses during the year; they carried on all kinds of social welfare work, furnished education along health lines, aided crippled children, and held infant welfare clinics. We are pleased to note both such activities and such public appreciation.

Dr. W. E. Gallie of Toronto, has been appointed Hunterian Professor of the Royal College of Surgeons in England, and will deliver a series of lectures on "The Use of Living Sutures in the Repair of Anatomical Defects." The lectures will refer to experimental work which Dr. Gallie has been carrying on with reference to the use of permanent living suture material in various surgical operations.

Dr. John S. Fitzgerald, professor of hygiene and preventive medicine, and director of the Connaught Laboratory, University of Toronto, was elected to membership in the International Health Board of the Rockefeller Foundation on December the 27th, 1923.

At a meeting of the Peterborough Medical Society on December 6th, Dr. J. J. Macleod gave a talk on "Insulin."

The Guelph Medical Society held a meeting on December 5th and the following addresses were given: Dr. G. S. Strathy, "The Differential Diagnosis of Pain in the Back;" Dr. F. A. Cleland, "Diagnosis and Treatment of Acute Abdominal Pelvic Conditions."

The Ontario County Medical Society met in Whitby on December 5th. Dr. J. W. Crane of London, spoke on "The Treatment of Nephritis;" and Professor G. S. Melvin of Queen's University, Kingston, gave an address on "The Autonomic Nervous System."

Dr. A. Primrose addressed a meeting of the South Waterloo Medical Society at Galt, on December 6th, taking as his subject, "A Clinical Study of Tumours of the Breast."

The York County Medical Society met at Richmond Hill on December 11th; Dr. Duncan Graham of Toronto gave an address on "The Diagnosis and Treatment of Pernicious Anaemia."

On December 12th, the Oxford County Medical Society met at Woodstock; an address was given by Dr. J. H. Elliott of Toronto, on "The Differential Diagnosis of Tuberculous and Non-Tuberculous Diseases of the Chest."

Dr. Geo. E. Wilson addressed the Perth County Medical Society on December 6th, on "Intestinal Obstruction."

The North Waterloo Medical Society met at Kitchener on December 7th. Dr. V. E. Henderson of Toronto spoke on "The Modern Conception of the Use of Drugs."

At a meeting of the Sudbury District Medical Society on December 13th, Dr. G. Pirie of Toronto, gave a talk on "The Toxaemias of Pregnancy."

On December 15th, Dr. W. B. Hendry of Toronto, addressed the Sault Ste. Marie Medical Society on "Modern Views on the Toxaemias of Pregnancy."

Dr. Gilbert Royce of Toronto, addressed the Thunder Bay Medical Society on December 15th, on "Disease in the Upper Air Passages and Accessory Sinuses."

At a meeting of the South Simcoe Medical Society held in Alliston on December 18th, Dr. W. G. Cosbie gave a talk on "The Toxaemias of Pregnancy."

The North Bay Medical Society met on December 18th; Dr. John Oille of Toronto, gave an address on "Rheumatic Fever and Endocarditis."

Dr. Geo. S. Strathy addressed the Welland County Medical Society on December 18th, on "Differential Diagnosis of Pain in the Back."

The Rockefeller Foundation appropriated the sum of \$1,000,000.00 previously promised to the medical school of the University of Toronto.

ALBERTA

The following are the officers of the Edmonton Academy of Medicine for 1924. Honorary President, Lieutenant-Governor Dr. Brett; President Elect, Dr. R. F. Nicholls; First Vice-President, Dr. D. B. Leitch;

Second Vice-President, Dr. F. A. Keillor, Treasurer; Dr. F. J. Follinsbee; Secretary, Dr. V. S. Kaufman; Executive, Dr. E. W. Allin, Dr. J. S. Wright, Dr. W. O. Farquharson.

BRITISH COLUMBIA

The 1924 "Osler" Lecture was delivered on the 8th of January by Dr. B. D. Gillies. This Lecture was established by the Vancouver Medical Association in memory of the late Sir Wm. Osler, who was an honorary member and interested adviser of the Association. Dr. Gillies having paid tribute to the wide knowledge and sterling worth of our great teacher, took as his subject "Recent advances in our knowledge of the Liver and its Functions." He emphasized the advances which had been made in physiological and biochemical research as applied to this organ and discussed in detail the various methods which have been advanced for determining its functional capacity. The conclusion of the lecturer was, that while no single test at present was complete, considerable information could be gathered from a combination of two or more of these and it was his opinion that in the near future a more easily applicable clinical method could be devised for ascertaining the less obvious departures from the normal.

The Fraser Valley Medical Society is one of the most active in the Province. Monthly meetings are held at which clinical addresses are given, whilst matters of a medico-political nature are also discussed. That these meetings are of great interest and use to the medical men in New Westminster and district is proven by the invariable good attendances.

The next luncheon of the B. C. Medical Association will be held on January 22nd, when an address on "Health Insurance," will be given by Mr. E. S. H. Winn, (Chairman of the Workmen's Compensation Board.) Mr. Winn has given much thought to this subject and his views should prove both interesting and instructive to the profession.

Dr. David Hartin of Nelson, has left for Europe to take post-graduate work, after which, it is understood,

he will engage in private practice in Spokane. Dr. Hartin was an active member and strong supporter of the B. C. Medical Association. He will be greatly missed in Nelson where he and his father, (the late Dr. Gilbert Hartin) practised for many years.

Two recent cases showed exploitation of the profession in industrial medical work have been brought to the attention of the Executive of the B. C. Medical Association. One case has already been satisfactorily adjusted, thus proving the value of the Association and the necessity for continued support and co-operation of its members.

General arrangements for the Pacific Northwest Medical Assn., meeting in June are well in hand, and at the recent meeting of the Vancouver Medical Association, that body was asked by the President-Elect, Dr. Alexander S. Monro, to appoint a Committee to attend to the local arrangements.

Dr. Lavell H. Leeson, late Assistant Superintendent of the Vancouver General Hospital, has resigned his position to engage in private practice. His place will be filled by Dr. R. H. Seymour.

Dr. T. R. Ponton has left for the neighbouring Republic to make a further survey of the work of the American Hospital Association.

Dr. H. H. Mackenzie is now associated with Dr. W. O. Rose of Nelson, in succession to Dr. Hartin.

Dr. Chas. F. Martin, of Montreal, paid a short visit to Vancouver in the early part of the month.

Peculiar Reactions between the Fifth and Seventh Cranial Nerves.—Paralysis of the muscles of expression of the same side of the face is a not uncommon sequel of section of the root of the fifth cranial nerve, also of ganglionectomy as practiced for the cure of major trigeminal neuralgia, and it has occurred frequently as a sequel of deep alcohol injections. Although sometimes this paralysis is very marked,

it fortunately seems to be always temporary; its occurrence, therefore, from a practical standpoint, is a matter not worth much consideration. W. T. Coughlin, St. Louis, reports two cases in which there was spasm of the facial muscle of the same side following section of the sensory root only of the fifth nerve.—*Jour. Am. Med. Ass.*, Dec. 15, 1923.

Book Reviews

The Normal Child, Its Care and Feeding. By Allan Brown, M.B. Price \$1.50. Published by F. D. Goodchild Company, Toronto.

This excellent little book of 250 pages is the first worthy compilation of its kind by a Canadian author. It should find a place in every Canadian home where there are children. Every page is full of information of the most practical kind concerning the innumerable problems which perplex the young and inexperienced mother. The advice given throughout is sound and free from the faddism which mars many books of this type. Naturally, a great deal of space is devoted to the problems of the first two years. The criticism has been made regarding books on medical subjects, for lay readers, that they usurp the place of the family physician by emphasizing too strongly the treatment of disease, and ignoring the treatment of the patient—a fundamental error. Such criticism cannot be levied against Dr. Brown's book, inasmuch as nothing in particular, and very little in general is mentioned regarding the special diseases; emphasis is laid chiefly on the elucidation of common, popular errors, and the importance of hygiene, proper food, training, etc.—details so often neglected in the average home.

The book is divided into 24 chapters, and contains 14 well chosen illustrations. In the chapter on Common Diseases, the discussion of dentition and "taking cold" is particularly good. Such complex questions as punishment and sex education, are dealt with in an unbiased and scientific manner. The chapter on Food Groups and Recipes, is perhaps the most comprehensive yet published. On the whole, the book is such that few of us can read it without benefit. It can be conscientiously recommended by the profession to nurses and mothers alike, and should do much to improve the many unfavourable conditions which surround the life of the growing Canadian child.

G. A. C.

Outlines of Palaeontology. By Prof. H. H. Swinerton, D.Sc., F.Z.S., F.G.S., 5½ x 9. VI, 420, 366 figures in text. Price 30s. Edward Arnold & Co., London.

This well printed and abundantly illustrated book will doubtless form a valuable addition to the library of the student of geology and palaeontology, but may prove very deep reading for the ordinary medical man; the book offers for those who have developed a taste for this subject a veritable mine of information.

V. E. H.

Bacteriology—A Study of Microorganisms and their Relation to Human Welfare. By Conn and Conn. 441 pages, illustrated. Price \$4.00. Published by Williams & Wilkins Co., Baltimore, 1923.

This book is comprised of some four hundred pages of text; an appendix of a technical nature dealing with bacteriological media, strains and charts, and a comprehensive index.

The subject matter deals with the nature of microorganisms, and their significance in connection with pathology, hygiene, agriculture, and the industries. Special emphasis is laid upon the history and development of bacteriology.

The book is intended primarily for use in college classes, in first year bacteriology, for students who intend to specialize in this subject, and for those who do not intend to pursue the subject further.

It is highly desirable that the student appreciate the many ramifications of the science of bacteriology

and that his horizon be broadened beyond the limits of the study of human pathogenic microorganisms. To the achievement of this end the book is admirably planned, and fulfils a very important need. One feels, however, that it is not authoritative. While the authors intentionally do not wish to make the subject matter too technical, there are several instances where the text is misleading. For example, in regard to the intracutaneous use of tuberculin in man, no sharp distinction is made between tuberculous infection and tuberculous disease; a pure culture of *B. diphtheriae* is not obtained by re-isolation from an infected guinea-pig.

The section on pathogenic organisms and the chapter on immunity are perhaps the weakest in the book. The majority of the illustrations are bad; *B. diphtheriae* is depicted as resembling cord wood.

A few microphotographs would be of distinct value. The book would benefit by revision. D. T. F.

Venereal Disease Information Bulletin. Issued monthly by the United States Public Health Service for use in its co-operative work with the State Health Departments; issued monthly from the Government Printing Office, Washington, D.C.

This Bulletin, which has now reached its fourth volume, is issued to clinicians, institutions, health departments and hospitals. It contains special articles dealing with venereal disease activities on an extended scale, and abstracts of articles on research, diagnosis, treatment, clinical and public health and administrative notes, in the field of venereal diseases.

It is primarily intended for the use of physicians and is of the utmost educational value to those engaged in work in this department of medicine. That such education is needed is revealed by one of the conclusions of the Committee of Inquiry on Venereal Disease in England, in January, 1922, whose report is published in full in Vol. IV., No. 7, of the bulletin under review. "That the general medical practitioner is not yet adequately equipped with the most advanced knowledge of venereal diseases and their treatment to enable him to deal competently with all the cases that come before him, and that an improvement in medical education in regard to venereal disease is necessary."

The work of the U. S. Public Health Service in this respect is worthy of the highest commendation. F. S. P.

Clinical Diagnosis, by Laboratory Methods. A working manual of Clinical Pathology. By James Campbell Todd, M.D., Professor of Clinical Pathology, University of Colorado. Fifth edition, enlarged and reset. Octavo of 762 pages with 325 illustrations, 29 in colours. Philadelphia and London: W. B. Saunders Company. Cloth \$6.00 net. The J. F. Hartz Co. Ltd., Toronto.

The revision of this fifth edition has been very carefully done and much of the best of the recent work in the chemical analysis of the blood and urine and the serodiagnostic methods has been incorporated. The many new illustrations, chiefly in the form of microphotographs are very good. Those in the chapter on the blood are excellent and make this section a most useful one for the student.

The value of the chapters on the animal parasites of man and the microscopic examination of the sputum and urine is also greatly enhanced by the numerous illustrations.

It is difficult in one volume to describe the technique of the many laboratory diagnostic tests now available, together with the underlying pathological processes, in sufficient detail to render possible the interpretation of the results obtained. A fair attempt to do this has been made in this volume and so it should be of value to the general practitioner. The laboratory worker and the medical student in particular, will find it, as indicated by its subtitle, a very satisfactory "working manual of clinical pathology."

H. C. C.

Ophthalmic Year-Book 1923; Vol. XIX. By Edward Jackson and William H. Crisp. 390 pages. Published by the Ophthalmic Publishing Co., Chicago.

This digest of the year's ophthalmic literature is of special interest to those in ophthalmological practice and has been compiled only after an immense amount of painstaking work on the part of the editors. It is divided into sections which have been placed in the hands of capable authorities; the abstracts are well made and complete lists of the papers abstracted, with the name of author, date and place of publication, etc., are given at the beginning of each section.

Such a volume does not lend itself to review; suffice it to say that it will be found complete and of the greatest assistance to all interested in eye work, detailing briefly what has been written in this specialty during the year; and recording where the publications may be found in full.

F. C. T.

Ophthalmic Society of Egypt, Bulletin of 1923.

This well-made bulletin of the Egyptian Society is a credit to its members. As one would expect, the greater part of the transactions have to do with conjunctival conditions, such being so common in Egypt. Trachoma, gonorrhoea and diphtheria, receive full notice. The value of the trephining operation in glaucoma has received special attention. It is interesting to note that much value is given to the thickened conjunctival flaps obtainable in Egyptian patients, and which are so often secondary to chronic conjunctival irritation. The volume shows great interest taken in research, and careful labour on the part of our Egyptian confrères.

F. C. T.

Official Medical History of the War—Pathology.

Edited by Major-General Sir W. G. Macpherson, Major-General Sir W. B. Leishman and Col. S. L. Cummins, London. Printed and published by His Majesty's Stationery Office, Imperial House, Kingsway, London W.C. 2, England, 1923. Price 21/9. Canadian Agents: The British Commonwealth Publishers, Ltd., Montreal, Toronto, Ottawa and Winnipeg.

This is the final volume of the series dealing with the medical problems of the Great War (in previous volumes the fields of general medicine, surgery, hygiene, etc., were covered) and is a notable addition to those already published.

The original organization of the pathological service is first outlined and the great expansion of this during the course of the four years of war is briefly but adequately summarized.

The physiology of wounds which is the subject of chapter 2, serves to provide Sir Almroth Wright with an opportunity of presenting in detail his views on this subject, which are based on the work he and his collaborators, Fleming, Colebrook and others, did at Boulogne Base during the War. A new and slightly bewildering terminology is introduced in this chapter by Wright. This may ultimately find its way into the text-books and thus gain general acceptance or it may suffer the fate of the "opsonic index" and gain refuge in oblivion.

Subsequent chapters by various authors are de-

voted to:—gas-gangrene; the bacteriology of anaerobic infections; infections of wounds by microbes other than spore-bearing anaerobes; latent sepsis in wounds; tetanus in its statistical aspects; the pathology and bacteriology of tetanus; the enteric fevers; diarrhoea and enteritis; amoebic dysentery; bacillary dysentery; typhus fever; cerebro-spinal fever; influenza; tuberculosis; trench fever; spirochaetal jaundice; acute infective polyneuritis; gingivitis and Vincent's angina; war-nephritis; and encephalitis lethargica. A brief statement in reference to the War Office collection of pathological specimens is included in a separate chapter.

The chapters on infections of wounds by microbes, other than spore-bearing anaerobes, by W. H. Tytler; on cerebro-spinal fever, by M. H. Gordon; on gas-gangrene and spirochaetal jaundice, by Adrian Stokes, and that on typhus fever by Andrew Balfour are especially noteworthy.

The pioneer work of McNee on trench-fever and of Stokes on spirochaetal jaundice is adequately and authoritatively treated in separate chapters which are among the most interesting in this volume, which constitutes a distinct addition to the literature of a large number of topics. Very useful, but not always complete, references are appended to the various chapters. A number of illustrations, including two coloured plates add to the value of the book.

As in other volumes of this series, so in this, the entire editorial direction (with one or two exceptions; these being pathologists now resident in the United Kingdom) has been entrusted to present or former members of the R.A.M.C. in the British Isles. The Dominions contributed in no small measure to the effectiveness of the pathological and of other medical services, (witness the work of Ellis, Tytler, Bowman, etc. to mention only a few of the Canadians) but with the exceptions above noted, they have been given no opportunity of aiding in the preparation of these volumes.

J. G. F.

Urology. By Edward L. Keyes, M. D., Ph.D., Prof. of Urology, Cornell University Medical College. Large 8vo. of 781 pages, 191 illustrations in the text, 18 plates, of which four are coloured. Price \$10.00. D. Appleton & Co., New York and London, 1923.

This work has an honourable, though one may not say ancient, ancestry. The original work by Van Buren and Keyes appeared as early as 1874 and was revised in the next decade. Under the title "The Surgical Diseases of the Genitourinary Organs" it received several revisions from 1892 to 1905 by the elder Keyes. Dropping the word surgical the present author gave the work three revisions from 1910. Now under a new name it appears as a sound and practical presentation of all that the author has found real worth in surgical diseases of the male urogenital tract. Gonorrhoea in the female, and syphilis have been dropped by the author as having no place in urology. Much that is new has been added, yet the author is careful to state that of the new he has added only that which bids fair to be sound. The work is of special value as having been written from the author's own experience, and each revision has added more and more of the personal touch. Each outline of treatment recommended appears to be in the same class as the remedies in John Wesley's "Primitive Physick" which bear an asterisk indicating "tried."

The subject matter appears in forty-eight chapters which are grouped under the headings: (1) Principles of Urology; (2) Gonorrhoea; (3) Diseases of the Urinary Organs; (4) Diseases of the Genital Organs; (5) Operative Surgery, and there is an excellent index.

The general impression received by a review of this book is that it is the work of a master of his subject, written with careful attention to detail. Gen-

eral management of a case receives the same care as does the surgical technique, and throughout one sees the influence of a man who treats the patient as well as his disease. J. H. E.

The Medical Year Book, 1924. Edited by F. R. Hewitt, Late Librarian of the Royal Society of Medicine; Assistant Librarian Royal College of Surgeons. 8vo. pp. 560. Price 12s 6d. William Heinemann, London, 1923.

This work has been undertaken in an attempt to provide a handy reference volume covering the current activities of the profession in the United Kingdom. A diary of meetings, lists, the more important medical societies with their hour of meeting, in convenient form. There is the list of the Ministry of Health and other official lists, the General Council of Medical Education and its personnel, the Fellowship and its courses, the metropolitan and provincial universities and their staffs, the hospitals of the United Kingdom with their staffs, a classified list of consultants and specialists, the corporations granting diplomas with their regulations, a list of the London and Provincial Medical Societies with their officers. Following these there is an obituary list covering the British Isles for the preceding year, abstract of wills of medical men and a list of charitable bequests for 1923. Other useful reference lists are those of British medical periodicals, and of medical books published last year. The work is unofficial, but an endeavour has been made to give reliable lists and information as secured from calendars, lists and other official sources. The information relating to examinations and fees will make it of service to those seeking British qualifications. The editor has succeeded in condensing an enormous amount of information into relatively small space. It is well indexed so that no time is lost in finding the matter in which one is interested. A few errors have crept into this initial volume. For example under London list of life assurance examining physicians we find the names of Montreal and Toronto physicians whose names appear on the official lists of the English branches of their respective companies. Twenty-eight osteopaths and bonesetters appear, but they are listed, not with the professional men but in the trade directory with dental apparatus, mineral waters and Turkish baths. J. H. E.

Exercise for Health and Correction. By Frank D. Dickson, M.D., and Rex L. Diveley, M.D. of Kansas City, Missouri. Small 8vo, 127 pages, 112 illustrations. Price \$2.00. J. B. Lippincott Company, Philadelphia, 1923.

This little handbook outlines and illustrates a progressive series of exercises, principally therapeutic and corrective with the aim of strengthening and developing groups of muscles whether these be healthy or diseased.

The exercises here given are arranged in five groups. Group I, Bed exercises, and II. Setting up exercises, are designed to tone up the general musculature of the body and to improve the general health. Group III. Postural exercises in the recumbent position, and Group IV. Standard exercises, are those which the authors consider to have a proven value in the treatment of poor carriage and visceroptosis, while Group V. is for the improvement of muscle balance in the foot for such conditions as flat foot and fallen arches. The illustrations with their concise text make all the movements clear. Little is said as to the indications for the application of the various movements. It is clearly not a work on therapeutics for the guidance of the public, but a well illustrated manual which the physician can place in the hands of a patient for whom any set of exercises may be prescribed. J. H. E.

The Treatment of Diabetes Mellitus, with observations based upon three thousand cases. By Elliott P. Joslin, M.D., M.A., Clinical Professor of Medicine, Harvard Medical School. 8vo, 784 pages. Third edition. Price \$8.00. Lea & Febiger, Philadelphia and New York, 1923.

Banting's discovery of the hormone of the pancreas has resulted in such advance in the therapy of diabetes as to necessitate a thorough recasting of Joslin's book on treatment. One of the standard works on the subject, the author through revision of the old, and the addition of all that is new, has again brought the volume up to date as a text book covering all that is necessary for the practitioner and teacher to know concerning diabetes and its treatment. Some of the gaps in our knowledge are plainly indicated in the text and numerous suggestions are made which may stimulate investigators to solve some of the remaining problems.

Though references to insulin are found throughout the work in relation to treatment and results, the first section of some eighty pages is devoted to insulin. The second section treats of etiology, incidence and curability. Section three is devoted to physiology and pathology, discussing blood sugar, lipoids, total metabolism, acidosis causes of death, with a splendidly illustrated subsection on the microscopic pathology of diabetes. In section four is discussed the examination of urine, blood and respiration. Section five dealing with diet is followed by treatment and general management of diabetics, including the complications. The closing section on foods and their compositions is very comprehensive and includes all the latest tables with suggested menus. All the tables necessary for metabolism work and diet estimations are appended.

The physician who is treating diabetes will find this work full of helpful suggestions, and may turn to it for help in any difficulty which may arise in the management of a case. J. H. E.

Modern Aspects of the Circulation in Health and Disease. By Carl J. Wiggers, M.D., Professor of Physiology, Western Reserve University, Cleveland. Second edition, 662 pages, 204 illustrations. Price \$7.50. Lea & Febiger, Philadelphia, 1923.

This revision brings this most excellent work up to date. It is eight years since the first edition appeared. In the intervening years many clinical and laboratory investigators have made notable additions to our knowledge of the circulation in health and disease while some earlier conceptions have undergone modification. Several chapters have been added, and of the remaining chapters a number have been extended or in part recast to bring the work in line with recent contributions to the subject. The illustrations which add much to the value of the book have been almost doubled in number. These changes have resulted in necessary increase in size of the work. The general plan of the former edition has been followed. The earlier part deals with physiology and treats of the modern conceptions of how the circulation is maintained in health. This is followed by a description of the various instruments and procedures used in the physiological and clinical laboratories for study of the circulation, and this leads up to the final section when the author undertakes to record the attempts of various writers including himself, to correlate the results of experimental laboratory investigation of abnormal conditions with the results found through bedside investigations, and these are both correlated as far as possible with the signs and symptoms observed by ordinary clinical examination. The work is essentially one for laboratory and clinical investigators, rather than for the general practitioner or undergraduate student in medicine. At the end of

each chapter is a lengthy bibliography of the phase of the subject under discussion, while the text is almost burdened by references to the literature. Time and again in the course of one's reading one wishes the author would write his own conclusions whether from his own investigations or that of others rather than quote so extensively. Yet perhaps this gives an added value to the book from the point of view of the worker for whom it is written.

The author is to be congratulated upon the manner in which he has critically reviewed such an immense volume of literature and upon the manner in which he has presented the results of his research. No laboratory whether physiological or clinical, dealing with cardiovascular research or study can afford to be without this volume.

J. H. E.

Diagnostic Methods. By Herbert Thomas Brooks, A.M., M.D., F.A.C.P., Professor of Clinical Medicine, College of Medical Evangelists, Los Angeles. Fourth edition, 8vo, 109 pages, 52 illustrations. Price \$1.75. C. V. Mosby Company, St. Louis, 1923.

The subtitle indicates that this is a guide for history taking, making of routine physical examinations and the usual laboratory tests necessary for students in clinical pathology, hospital internes and practicing physicians. That it is now in its fourth edition would indicate that it has found a place in the equipment of students and physicians.

The history taking and physical examination is outlined only, but serves to make the student investigate all the systems and special organs. The laboratory tests are those in general use. The student is advised to use a more extensive work on clinical diagnosis as a reference book. It would seem unnecessary to include the technique of the Wassermann test and the complement fixation test for gonorrhoea in an otherwise elementary text book. Nor should the ophthalmo-tuberculin test be included as a test of particular value. It has been generally discarded, and like the Moro ointment test which is also included, is now of academic rather than practical interest.

J. H. E.

Pulmonary Tuberculosis, its Diagnosis and Treatment. By John Guy, M.D., D.P.H., F.R.C.P. (Edin.) Deputy Medical Officer of Health and Tuberculosis Officer for the City of Edinburgh; Lecturer on Tuberculosis, School of Medicine of the Royal College, Edinburgh. 8vo. Pages xii + 307, 51 illustrations. Price 16s. Oliver & Boyd, Edinburgh, 1923.

The author has written a manual for students and general practitioners in which he attempts to present in concise form the salient points of tuberculous disease of the lung. He has succeeded in giving within reasonable space the most important facts and least debatable of existing opinions relating to the disease, its distribution, etiology, diagnosis, differential diagnosis and treatment. Written primarily for the student it offers the general practitioner a good survey of our present knowledge of the clinical aspect of the disease. The physical diagnosis is well written and the outline of treatment is good. The epidemiology is in part based upon tables which are not brought down to date, but the general picture of the distribution of tuberculosis and the generally falling death rate is well presented. Unfortunately for the Canadian student and practitioner the x-ray chapter is not in conformity with the best diagnostic practice here; only the single plate is used. To-day in Canada it is recognized that for early diagnosis and for differential diagnosis the stereoscopic plate or film must be used. The single plate cannot begin to compare in

value with stereoscopic plates, and may lead to false deductions because of the inability to differentiate overlying shadows and to learn at what depth the components of the shadow lie.

In the classification of tuberculosis that of the American Sanatorium Association of 1916 is given. The author is apparently not aware of their more recent classification in which x-ray findings are included, and in which the term *incipient* is replaced by *minimal*.

J. H. E.

The Smoke Inspectors' Handbook or Economic Smoke Abatement. By Herbert G. Clinch, M.R.San.I., M.I.H., Chief Smoke Inspector, Halifax County Borough; Certificated Smoke Inspector and Sanitary Inspector, with a foreword by Cyril Banks, M.B., B.S. (Lond.), D.P.H. (Sheff.) Medical Officer of Health, County Borough of Halifax; with sixty illustrations. London: H. K. Lewis & Co. Ltd., 1923.

This book (p. 136 with index; well illustrated) is intended to give to the Health Officer the data he requires concerning the smoke nuisance, without overburdening him with engineering technicalities. It is presented in an interesting and logical manner and will certainly make clear to smoke inspectors the principles and practice of their work. Proper firing would appear to be the solution. This not alone "abates the nuisance" but also economizes fuel. The chapter titles indicate the scope well—Heat and Energy, Fuel, Combustion, Stokers' Work, Draught, Flue Gases, Smoke, Economizers, Boilers, Mechanical Stokers, and the (English) Laws relating to Emission of Smoke. We all object to the smoke nuisance for many reasons and are glad to see a sane and very practical handbook on it. But on this side of the water, smoke nuisance is not considered very seriously as a *public health* problem, however objectionable in many other ways it certainly is. Hence the tendency to regard it, like street cleaning, little as a public health enterprise, much as one of *municipal cleanliness*, order, decency and economy. Its immediate supervision belongs, like that of the water and sewage plants, garbage collection, etc. rather to the public works or engineering department than to Boards of Health.

We cannot emphasize too often the Western Hemisphere view that *public health* is at bottom a biological not an engineering or mechanical profession.

H. W. H.

International Clinics. Thirty-third series, volume iv, 1923. Edited by Henry W. Cattell, A.M., M.D., Philadelphia, U.S.A., with Medical and Surgical Collaborators in United States, England and Canada. J. B. Lippincott Company, Montreal, Quebec. Price \$2.50 per volume or \$10.00 for the series of four.

The present volume completes the Thirty-Third Series and in every way keeps up to the high standard reached by the Clinics. Every practising physician will find in the Clinics much that will be of help to him in his work, covering as each series does a wide field in medicine, surgery, pediatrics, therapeutics and various branches of the medical sciences. Forty-seven pages of the current number deals with gastric and duodenal ulcer in papers from English, Swiss and American sources. Diagnosis and treatment are well represented, and the paper by J. J. Walsh on medical fads is one which should give the physician much food for thought. Pediatrics, obstetrics and surgery are further departments with excellent communications. The Alvarenga Prize Essay is printed with splendid illustrations. It is a comprehensive monograph on echinococcus disease.

J. H. E.

Essential Points in the Diet of Growth

1. The food must contain those food-accessory substances known as Vitamins, but the presence of the Vitamins is not sufficient in itself.
2. The food must be well balanced, for a deficiency in one element means the ineffective action of the other food elements.
3. The Vitamins-containing food, even though well balanced, must be one that is easily assimilated. It is a physiological crime to clog the system with fats that cannot be digested.

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VIROL, LIMITED, HANGER LANE, EALING, LONDON, W.5.

Bovril Limited, Distributors of Virol, 2725 Park Avenue, Montreal

A Manual of Proctology. By T. Chittenden Hill, Ph.B., M.D., F.R.C.S., Instructor in Proctology, Harvard Graduate School of Medicine, Surgeon to Rectal Department, Boston Dispensary. Pages 279, illustrated with 84 engravings. Price \$3.25. Lea & Febiger, Philadelphia and New York, 1923.

This small manual contains an excellent review of the commoner affections of the rectum and anus. It is evidently based on the author's personal experience, and especially in treatment gives prominence to those methods which he has found of value in his own work. The chapters on rectal abscesses, fistula and haemorrhoids are particularly good, though one wonders why in the operative treatment of the latter condition the Whitehead operation is so lightly regarded.

In contrast, the reference to the symptoms and diagnosis of cancer of the rectum is very scant and incomplete, while the treatment consists entirely of a chapter quoted from Miles of London.

Within its limits the volume is of distinct value.

E. R. S.

A Manual of the Practice of Medicine. Prepared especially for students. By A. A. Stevens, M.D., Professor of Applied Therapeutics, University of Pennsylvania. Eleventh edition, entirely reset. 12mo. of 645 pages, illustrated. Cloth, \$3.50 net. W. B. Saunders Company, Philadelphia and London: The J. F. Hartz Company, Limited, Toronto, 1923.

Eleven editions, and reprintings almost yearly since the first edition appear in 1892, indicate the popularity of this concise manual for students. The present edition has a number of subheadings added to several chapters bringing it up to date as a safe guide to the student, whether used for hurried reference or for a review of the more important points in diagnosis and treatment. The pathology and treatment of diabetes has not been brought up to date. The same may be said of encephalitis lethargica. The

contra-indications for the use of tuberculin are not carefully stated, and there are a few other minor faults which do not, however, detract from the general value of the manual.

J. H. E.

Habitual Constipation, its Causes, Consequences, Prevention and Rational Treatment. By Ismar Boas, M.D., Professor of Medicine in Berlin, translated by Thomas L. Stedman, M.D. 12mo. of 299 pages, illustrated. Price \$2.00. Funk & Wagnalls, New York, 1923.

This treatise has been written with the intention that it be placed in the hands of the patient by the physician that he may secure better co-operation in treatment. Prof. Boas is convinced that chronic constipation is a disease which need not exist if combated with sufficient energy and understanding. He believes that drugs are to be used sparingly and should be only a means to an end, that no patient need take laxatives over a long period of time. By explaining the nature of the disease and its consequences he believes the patient will follow the physician's counsel more readily. The book is not written for the laity in order that they may treat themselves. It is written as an aid to the physician in his task of treatment of a chronic disease of civilization which affects all ages and all classes. The book has no index and each page carries the book title instead of the chapter title making reference more difficult. The book will doubtless find friends in the profession. It should be of assistance.

J. H. E.

Diseases of the Skin. By Frank Crozer Knowles, M.D. Second edition, thoroughly revised. 229 illustrations and 14 plates. Price \$6.50. Published by Lea & Febiger, Philadelphia and New York.

This is a very excellent work. Although a comparatively small book, the various diseases are gone into thoroughly. This book can be highly recommended, especially to students.

D. K. S.

Books Received

Official Medical History of the War—Volume II.—By Major-General Sir W. G. MacPherson, K.C.M.G., C.B., LL.D. 510 pages, illustrated. Printed and published by His Majesty's Stationery Office, London, England. Price 21s. net.

International Clinics—Volume IV. Thirty-third Series—By leading members of the medical profession throughout the world. 308 pages, illustrated. Published by J. B. Lippincott Company, Philadelphia, U.S.A.

The Medical Year Book—By Charles R. Hewitt. 592 pages. Price 12s. 6d. net. Published by William Heinemann, Ltd., 20 Bedford St., London, W.C. 2.

Infection Immunity and Biologic Therapy—By John A. Kolmer, M.D., D.P.H., D.Sc. (Hon.) Third edition. Octavo of 1,210 pages, containing 202 original illustrations, 51 in colours. Cloth, \$12.00 net. Published by W. B. Saunders Company, Philadelphia, Pa. Toronto Agents: The J. F. Hartz Co., Limited, Toronto.

Orthopaedic Surgery—By Royal Whitman, M.D., M.R.C.S., F.A.C.S. Seventh edition. 993 pages with 877 engravings. Price \$9.00. Published by Lea and Febiger, Philadelphia, U.S.A.

Diseases of the Skin—By Richard L. Sutton, M.D., LL.D. 5th edition. 1,214 pages with 1,069 illustrations and 11 coloured plates. Price \$10.00. Published by C. V. Mosby Company, St. Louis.

Petit Dictionnaire de Médecine—Termes médicaux. Expressions techniques, par le Docteur E. Dabout. 662 pages. Price 20 fr. Published by J. B. Baillière et Fils, 19, Rue Hautefeuille, Paris.

Treasury—Annual Reports, 1923—U.S. Public Health Service—316 pages, illustrated. Price 75c. Published by Government Printing Office, Washington, D.C.

The Rockefeller Foundation—Annual Report, 1922.—419 pages, illustrated. Published by the Rockefeller Foundation, 61 Broadway, New York, N.Y.

HEMOSTYL du DR. ROUSSEL

Pure Haemopoietique Serum

Hemostyl is a **horse serum** collected with all due precautions, at such times when the animal is at its maximum point of blood regeneration.

It is an ideal serum being both **Haemopoietic** (Haemogenic) (see Carnot, *Academie des Sciences*, Aug. 27th, 1906) and also **Haemostatic** (Weill, Carnot, *Rapport au 13th Congres de Medecine*, 1912).

Further, as Hemostyl is prepared from only young and healthy animals, it can be used in all cases **in which normal Horse Serum is indicated**, viz.—General or Local Leucocytosis.

The sterilisation of Hemostyl is secured by five intermittent operations at 50°C.

I HEMOSTYL a haemopoietic agent Treatment of Anaemias

1.—Hemostyl Pure Serum.

Except in urgent cases, when subcutaneous injections can be given, the Routine method of taking the serum is either by the **mouth** or by the **rectum**. Taken this way Hemostyl possesses the great advantage of never being followed by the various annoying serie sequelae Erythema, Arthralgia, Serie Anaphylaxis.

Dose

One or two ampoules daily.

In cases of urgency, 30 cc. of the pure Serum should be given subcutaneously, to be followed by the routine method. Site of injection and Technique, the same as employed for anti-diphtheritic Serum.

There need be no hesitation to employ this method as the contingency of a serie reaction is negligible when compared with a precarious condition such as post-haemorrhagic anaemia.

Hemostyl Serum is supplied in boxes of 6 ampoules of 10 cc. each.

2.—Hemostyl Syrup.

Total Haemopoietic blood mixed with Saccharo-glycerine, Cocoa-vanilla syrup.

Bottle of 250 cc.

Two or three tablespoonfuls a day, either pure or in a little water.

3.—Hemostyl Tablets.

Haemopoietic total blood dried at a low temperature. In boxes of 45 Tablets.

Two tablets, three or four times a day, before meals.

The tablets should be crunched and swallowed with a little cold water without allowing them to dissolve in the mouth.

II HEMOSTYL a haemostatic agent Treatment of Haemorrhages

As a haemostatic, only the Liquid Serum in flask-phials is to be employed.

1.—External Haemorrhages.

Wounds, Epistaxis, Bleeding from Gums, Metrorrhagia.

Local tamponnage with gauze, wadding or lint soaked in Hemostyl Serum.

2.—Internal Haemorrhages.

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| Haemoptysis. | (a) Acute cases. |
| Haematemesis. | Subcutaneous injection of 30 cc. (3 flask-phials) to be repeated if necessary in 24 or 48 hours. |
| Melaena. | (b) Subacute cases. |
| Metrorrhagia. | Two to four flask-phials a day either by the mouth or rectum. |
| Enterorrhagia (typhoid, etc.) | (c) Local application should at the same time be adopted where possible—Metrorrhagia. |

3.—Haemophilia.

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| Curative | } Two to four flask-phials as above. |
| Preventive | |

4.—The Serum should be employed before surgical intervention in cases where patients are suffering from diseases prone to cause bleeding.

Literature and Samples: J. I. EDDÉ, New Birks Bldg., Montreal

The Growing Importance of Preventive Medicine to the General Practitioner.—If the medical profession is to retain in the highest possible degree the confidence of the general public, John M. Dodson, Chicago, says it must recognize changing conditions and alter methods of practice accordingly. In doing this the profession must constantly seek to meet the real needs and serve the best interests of the public. Unquestionably, the greatest possibilities of usefulness of the physician to the public lie in the field of preventive medicine. The family physician who seeks to render to his patients the service which will do them the most good is bound to enter the field of preventive medicine; to become, in other words, the family health adviser as well as the family physician. The idea that seems to be entertained by some physicians that the physician is the only man who is competent or has the right to discuss matters of health, Dodson says, is wholly erroneous. He is better qualified to assume leadership in many phases of this movement, but it is the height of folly for him to decline to co-operate cordially and continuously with several other agencies that are working in this field. It is his right to insist that the activities of each of these groups of workers be confined to the domain for which their training has fitted them. Physicians must equip themselves far better than they have been heretofore equipped to give instruction to the public concerning community and especially individual hygiene. They must co-operate cordially and effectively with the duly appointed health officers, not only in complying with the legal requirements as to the reporting of births, deaths, cases of communicable disease, and the like, but in the matter of arousing the citizens of the community to the importance and great possibilities of preventive measures. Training of the family physician for such work can be accomplished only by a considerable amount of carefully planned, systematic, effective instruction along the lines of preventive medicine. We need extensive provision for continuation courses conducted by state or local health officers at convenient points and for such periods of time as will make it possible for the family physician to attend them without unreasonable interference with his practice. One thing is certain—the health officers, community, state

and federal—are hopelessly handicapped unless they have the cordial, constant, sympathetic and intelligent co-operation of the physicians of that community. For the coming generation of medical men, that is, the medical student of to-day, the plan of education must be modified to stress the preventive side of medicine much more than it has ever been stressed. The practitioner of medicine must have a reasonably broad, comprehensive knowledge of medicine; first, of the fundamental sciences on which the practice of medicine is based, and then of the clinical applications of these sciences. The foundations to be laid in these sciences are essentially the same for preventive as for curative medicine. Somewhat more emphasis should be laid on those facts and methods of bacteriology and hygiene which have to do with prevention; but the important change that is needed is a change in attitude of the clinical teacher. The medical faculty and especially the clinical teachers of every medical school should come to realize that the medicine of the future is to be in large part preventive medicine, and it is their duty to prepare their students for service along these lines.—*Jour. Am. Med. Ass.*, Oct. 27, 1923.

A Modified Rib-Resection Operation for Empyema.—To secure proper drainage in empyema, George Schwartz, New York, believes that rib resection is necessary. Osteomyelitis of the rib occurs in 4 per cent. of the cases, resulting in long-standing fevers, anaemia and protracted convalescence, and requiring a secondary operation for a cure. The reason why necrosis of the rib occurs is that the open ends of the rib are exposed, are constantly being bathed in pus, and are involved by continuity of the infection. Heretofore, no means has been devised of sealing up these open ends to prevent contamination, thus closing up an avenue of infection that gives rise to a general sepsis. The operation is very simple and takes only a minute more than the usual procedure. It entirely removes the 4 per cent. chance of a rib necrosis and re-operation, and may save months in convalescence. The bone-wax seals up the end of the open rib, and the muscle flap gives added protection. —*Jour. Am. Med. Ass.*, Dec. 15, 1923.